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ATTEMPTED SUICIDE IN CAPE TOWN

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This preliminary report is concerned with the 252 cases of attempted suicide admitted to the Groote Schuur Hospital during the past 3½ years.

The significant fact emerges that during this time only two Natives were admitted following a suicidal attempt, while 46 patients were Coloured and 204 European.

The most common means used by Europeans in attempting suicide was a barbiturate drug. Arsenic (invariably in the form of ant poison) was used rather less frequently (Table 1). One out of every two Europeans chose either of these means.

TABLE I: MEANS USED (EUROPEANS)

Barbiturate 77.	Drowning 3.
Ant poison 51.	Morphine 2.
Lysol 14.	Liniment 2.
Bullet-wound head 7.	Methylated spirits 2.
Cut throat 7.	Jumped before train 1.
Dettol 7.	Walked before lorry 1.
Aspirin 6.	Jeyes' fluid 1.
Iodine 6.	Spirits of salt 1.
Cut wrist 5.	Gelonida 1
Jumped from height 4.	Naphthalene 1.
Hanging 3.	Gas 1.
	Strychnine 1.

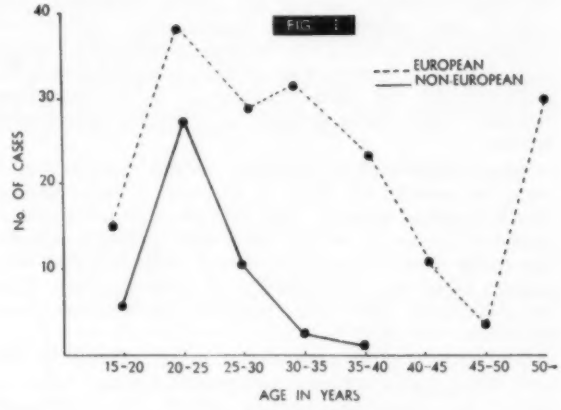
The non-European, probably because of ignorance and because drugs are less available, chose more drastic methods (Table II). Swallowing of caustic soda,

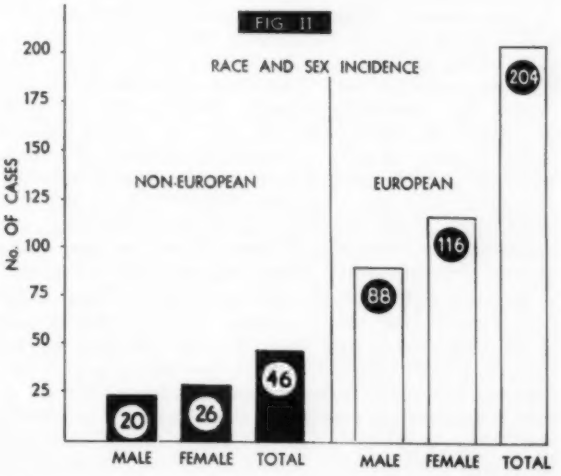
TABLE II: MEANS USED (NON-EUROPEANS)

Lysol 13.	Pyagra 1.
Ant poison 10.	Spirits of salt 1.
Caustic soda 3.	Hydrochloric acid 1.
Cut throat 3.	Liniment 1.
Barbiturate 3.	Camphorated oil 1.
Iodine 3.	Dettol 1.
Turpentine 2.	Levens Essens and 3 white tablets 1.
Drowning 1.	Motor-car polish 1.
Chewing razor blades 1.	
Jumped before train 1.	

turpentine, hydrochloric acid and the chewing of razor blades were used by Coloured persons and not resorted to by the Europeans. Nearly all the non-Europeans of the series were young people, in the third decade of life (Fig. 1). The Coloured patient's attempt is far more frequently a gesture of anger, or of resentment when neglected by a loved person, than a serious attempt at self-destruction.

It is usually stated that women more often attempt suicide than men. In this series, ranging from January 1947 to May 1950, females exceed males in both racial





groups, but not to the extent revealed by surveys of other cities (Fig. 2) (e.g. Piker in Cincinnati (1938), over a 10-year period: males, 33%; females, 67%).

THE PROBLEM PRESENTED

An attempt was made to collect the case records of patients admitted before 1947, but it soon became evident that information was too inadequate to be of any value. The practitioners who received the patients after their suicidal attempts apparently did not recognize the essential problem presented. Such patients were usually discharged after a stomach washout had been done, or other emergency treatment given. The procedure adopted during more recent years is as follows:—When immediate life-saving treatment has been given the patient is admitted for medical supervision, a psychiatric interview, and the attention of the social worker, who may be able to adjust important environmental factors, e.g. parental clumsiness, marital stress, economic difficulties and unemployment.

Superficial environmental reasons are perhaps too readily accepted as accounting for the suicidal attempt, and the true complexity of the action is thus overlooked. Although external factors are often important, and suicide may appear as a logical way out of an intolerable situation, it has become increasingly evident that there is in nearly every patient a deeper psychological motive for self-destruction. It is, therefore, essential that each patient be afforded psychiatric service.

The popular view is that no 'normal' person would stoop to suicide, i.e. there is a strong popular feeling directed against suicide. This attitude does not so much question the sanity of the man who attempts suicide, but rather does it imply an ethical judgment that self-murder is wrong, or cowardly, or contemptible. It is our experience that many medical practitioners share this view.

Besides having to cope with a moral attitude of this sort, when he is already aware that he has behaved badly, the attempted suicide suffers the additional practical difficulty of being unwelcome in the hospital. A busy casualty officer may resent spending time on a self-inflicted injury. (Insurance benefit funds use the same ethic to deprive such patients of sick-pay.) The physician perhaps feels hampered when failed suicides occupy his limited bed-space. From a nursing point of view, attempted suicides are an embarrassment because they require constant watching and have tediously to be kept away from possible means of injury. A patient who has attempted suicide is regarded with some awe. If the incidence continues to increase, and unless a re-orientation of outlook occurs, the failed suicide is in danger of being regarded with boredom.

The medical literature dealing with the subject has been sparse. All writers agree, however, that suicide is of vast importance and, if only because of the frequency with which it occurs, requires urgent study. For some obscure reason suicide received little attention during the past 40 years when dynamic psychiatry was being developed. In the more recent literature, while statistical reports continue to appear, the emphasis of study falls on the basic personality of the person who attempts suicide. The suicidal act of contemporary man is an intensely individual action, demonstrating to the final degree his aloneness and his awareness that he is ill equipped for living. Often the apparent reason for the suicidal attempt, will, on closer examination, be found to be no more than a precipitating factor.

The youngest patient in this series was a European girl aged 11 years. She had been enticed into his room by a middle-aged man who assaulted her sexually. She did not tell her parents of the outrage, and the man continued to greet the child and her friend on their way to school. After a few weeks, the child went to confess to the principal, and he took her and her mother to the police. In the charge-office the child vomited repeatedly, and only when they arrived back home did she tell her mother that she had drunk ant poison borrowed from a neighbour. She did not do so because she had been raped, but because she was afraid of her father, and did not want to be confronted by him when he came back home. After leaving hospital, the child refused to get out of bed in the morning and could not look at people when they spoke to her. This neurotic behaviour ceased when her father was persuaded to refrain from expressing his anger and disappointment in the child's presence.

SUICIDE AND MENTAL ABNORMALITY

The incidence of psychosis in the present series is small, certainly not higher than 10%. This figure allows for the inadequate study of some of the cases. The obsolete idea that a man has to be mad before he resorts to suicide and that a suicidal attempt is evidence of psychosis, is therefore again disproved. On the other hand, D. K. Henderson, who for three years studied all attempted suicides admitted to the Royal Infirmary, Edinburgh, concluded that he had not found one who was considered of sound mind at the time the act was committed. The inference from such a conclusion is obvious. An attempt at self-murder is in itself a direct indication by a person that he is in need of psychiatric assistance. Not to afford him such service is an act of medical stinting, and a major failure. Further, the services of a social worker are essential when such a patient is being returned to the community.

In this series there is a single patient who asserted that his reasons for suicide were intellectual. Using logical arguments, he had arrived at the decision that there was no purpose in living in a world on which men were capable of dropping an atomic bomb; his friends gossiped maliciously about their inoffensive acquaintances; it seemed to him that people were for the most part base, and motivated by inferior intentions. On examination it became obvious that he was himself as unstable as civilization was crooked.

Of the European patients, 12 were regarded as psychotic (6%). The diagnoses were as follows: reactive depression, 4; manic-depressive psychosis, 3; dementia praecox, 3; acute alcoholic hallucinosis, 1; senile dementia, 1.

Psychosis was present in five of the 48 non-European patients (11%). Of these, four suffered from dementia praecox, the other being a case of acute confusional psychosis in a patient with sub-acute bacterial endocarditis.

THE PROGNOSIS

The prognosis depends on the nature and treatability of the underlying personality disorder, and the energy with which the social dislocation is corrected. During the period under survey, only two patients among those here reported subsequently achieved suicide. One was an elderly woman who had walked into the sea. She

was psychotic, obsessed by an intense fear of her husband and troubled by psychosomatic delusions (lights going on and off in her body, causing pains and sudden shocks). Her relatives failed to use the advice that she should not return to her husband. She later cut her throat with a kitchen knife.

The other unsuccessful case was a university student, aged 27 years. Although superficially an intelligent, cheerful man with many friends, when interviewed after he had attempted to hang himself from a door-knob with his tie, he expressed ideas of fear and aversion directed at his mother. He was dismayed by the state the world was in. He had become a Catholic, and influenced by the writing of Eric Gill, had seriously considered doing only honest manual work. He had even asked a shoe-maker what the conditions of apprenticeship were. He had powerful, suppressed misgivings that he was rejected of society, with some basis in fact. While in the army, he had been suspended from the rafters of a hutment, and at Helwan he was, perhaps playfully, pushed into a swimming-pool when fully dressed. He subsequently succeeded in hanging himself during a holiday on a farm.

In one patient no evidence of personality disorder was found. He was a Polish immigrant who, soon after his wife died of carcinoma, developed haematuria and severe backache, so that he could no longer do his work in the cold-storage plant where he had been employed for many years. For months he begged food from restaurant kitchens and slept with his head on the table at an all-night café. When these reliefs were stopped, and he was still not able to find work, he tried to hang himself in a public lavatory. It would appear that his suicidal attempt was entirely due to socio-economic circumstances.

Environmental factors are seldom blamed by the non-European, in spite of his unfavourable life-conditions.

CONCLUSIONS

1. The apparent reason for the suicidal attempt is often no more than a precipitating cause.
2. The small population and time sample suggests that the Native rarely attempts suicide.
3. The youth of the Coloured person attempting suicide is stressed, and the observation made that his attempt is more often a gesture to gain some end rather than a reasoned desire to die.
4. Frank psychosis does not occur frequently among those attempting suicide.
5. It is perhaps necessary that barbiturate drugs should be made less generally available and the sale of ant poison more closely restricted.

I have to thank Miss M. Walton, B.Soc.Sci., for her assistance.

NEW PREPARATIONS AND APPLIANCES

INTRAMUSCULAR HEPARIN—EVANS

There is now available a sterile, pyrogen-free solution of heparin containing 25,000 International Units per ml. for intramuscular or intravenous administration.

In the past, one of the chief disadvantages of the use of heparin has been that frequent intravenous injections had to be administered in order to maintain adequate heparinization. This disadvantage has now been overcome by the introduction of a highly concentrated solution which is effective when administered by the intramuscular route. Where a rapid heparin effect is required, this concentrated solution can be injected intravenously.

Indications:

1. Coronary thrombosis.
2. Prophylaxis against thrombo-embolic phenomena especially following on difficult or delayed childbirth or abdominal operations.
3. The treatment of thrombophlebitis, pulmonary and cerebral embolism.
4. As a routine measure in vascular surgery.
5. In the treatment of acute articular rheumatism.

Dosage Schedule: It is likely that individual variation in heparin tolerance will be found to be considerable and the dosage of heparin by the intramuscular route will have to be regulated to suit individual needs. There is available evidence to suggest that when given by the intramuscular route there is a summation of heparin effect and the dosage can often be considerably reduced after the first two or three injections.

The *intramuscular* injection of heparin at the rate of 500 International Units per kilo body weight at 12-hourly intervals has been shown to increase the clotting time to a satisfactory figure.

Excellent results in the treatment of thrombo-phlebitis have been obtained with 12,500 International Units, intramuscularly at 12-hourly intervals. This form of therapy has been adopted as a routine procedure in certain hospitals in the United Kingdom.

Note: To ensure adequate heparinization it is important that the injection is given intramuscularly and not deep subcutaneously.

Intramuscular Heparin (*Evans*) is available in 5 ml. rubber-capped vials.

* * * *

DISPRIN: A NEUTRAL, SOLUBLE ASPIRIN

The advantages of calcium aspirin have long been recognized and have been referred to frequently in the medical press. It is more speedily assimilated and less rapidly eliminated.

Calcium aspirin is much less likely than ordinary aspirin to cause irritation to the gastric mucosa, and can often be taken by patients in whom ordinary aspirin produces dyspeptic symptoms. Where massive doses are indicated, e.g. for rheumatic fever, calcium aspirin has less tendency to produce an albuminuria, and is less toxic as determined by the so-called secondary signs of toxicity such as vertigo, convulsions, disturbance of vision and hearing. These advantages indicate that calcium aspirin is to be preferred where aspirin would ordinarily be administered.

A marked disadvantage of calcium aspirin hitherto, however, has always been its inherent instability. For example, B.P.C. calcium aspirin, whether in powder or tablet form, is recognized to be unstable and to be very sensitive to moisture, with resulting decomposition. This decomposition of calcium aspirin to the more toxic and pharmacologically different salicylic acid and the nauseous acetic acid, once started, becomes autocatalytic. Thus stability is essential, if the advantages of calcium aspirin over ordinary aspirin are to be realized in practice.

This problem has now been overcome with the introduction of Disprin, a neutral, soluble, calcium aspirin tablet. The tablet is so formulated that when placed in water, a solution of calcium acetylsalicylate results from the interaction of the acetylsalicylic acid and the calcium base. In other words, the calcium aspirin is not formed until the tablet is activated by water or other aqueous fluid. Its inherent instability and the undesirable decomposition products are thus avoided.

Disprin is manufactured by Messrs. Reckitt & Colman (Africa) Limited, and is now available throughout the Union and Rhodesia from all chemists, druggists and pharmaceutical wholesalers.

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EDITORIAL

INTERNS IN THE UNITED KINGDOM

A recent issue of the *British Medical Journal* (5 August 1950, p. 337) draws attention to the introduction of the intern year. The Bill was treated as a non-party measure and the General Medical Council as well as the Minister of Health were open to argument with the result that important amendments were introduced into the Bill and important assurances were obtained.

The position now is that 'after securing a registrable qualification a student will be obliged, from a day to be appointed, to spend a period to be prescribed in a resident appointment at an approved hospital or institution.

'It will probably be a year, or even two years, before an "appointed day" can be set with the assurance that there will be places available for every medical student who qualifies. The period to be prescribed, probably 12 months as it was in the original Bill, is now to be decided by the G.M.C., subject to the approval of the Privy Council. Once these points have been settled the newly qualified man or woman must first of all seek and obtain an appointment. He or she has then to submit to the Registrar of the G.M.C. evidence of appointment, evidence of qualification—and five guineas—to secure "provisional registration". Full registration will follow on presenting to the Registrar a certificate of satisfactory service duly completed—and six guineas. Until the newly qualified are fully registered they will not be at liberty to practise other than in an "approved appointment". Subject to certain safeguards, approved appointments may at some future date include appointments at suitable health centres. These appointments are intended to be an extension of the period of medical education, though they will carry a rate of remuneration of £350 a year for the first six months and £400 a year for the second six months. The scope of the work that can be undertaken by a provisionally registered practitioner will depend on rules to be laid down by the Privy Council. It is anticipated that anyone provisionally registered will be authorized to sign death certificates and to prescribe dangerous drugs. Reciprocal arrangements with the Republic of Ireland have been negotiated, and it seems that similar arrangements may be made with, for example, New South Wales, the Union of South Africa, and other countries.'

VAN DIE REDAKSIE

'INTERNS IN DIE VERENIGDE KONINKRYK

'n Onlangse nommer van die *British Medical Journal* (5 Augustus 1950, bl. 337) vestig die aandag op die instelling van die internjaar. Die Wetsontwerp is as 'n nie-partymaatreël behandel en die *General Medical Council* asook die Ministerie van Gesondheid kon bespreek word met die gevolg dat belangrike wysigings in die Wetsontwerp aangebring is en belangrike versekeringe verkry is.

Sake staan nou so dat ,na verkryging van 'n registreerbare kwalifikasie, studente verplig sal wees om vanaf 'n dag wat vasgestel sal word 'n inwoningsaanstelling by 'n goedgekeurde hospitaal of inrigting te aanvaar vir 'n tydperk wat voorgeskryf sal word.

,Dit sal waarskynlik 'n jaar of selfs twee jaar duur voordat 'n „vasgestelde dag" bepaal kan word met die sekerheid dat daar plekke beskikbaar sal wees vir elke mediese student wat kwalifiseer. Die tydperk wat voorgeskryf sal word, waarskynlik 12 maande soos dit in die oorspronklike Wetsontwerp was, sal nou deur die *G.M.C.* bepaal word onderworpe aan die goedkeuring van die Geheime Raad. As hierdie kwessies eers uit die weg geruim is, moet die nuutgekwalifiseerde man of vrou eerstens 'n aanstelling soek en vind. Hy of sy moet dan aan die Registrateur van die *G.M.C.* bewys van aanstelling, bewys van kwalifikasie en vyf ghienies voorlê ten einde „voorlopige registrasie" te verkry. Volle registrasie sal volg wanneer aan die Registrateur gelewer word 'n sertifikaat dat bevredigende diens behoorlik voltooi is—en ses ghienies. Totdat die nuutgekwalifiseerde ten volle geregistreer is, sal hulle nie vry wees om te praktiseer nie, behalwe in 'n „goedgekeurde aanstelling". Onderworpe aan sekere waarborge kan goedgekeurde aanstellings op een of ander toekomstige datum aanstellings by geskikte gesondheidsentrums insluit. Hierdie aanstellings is bedoel om 'n uitbreiding van die tydperk van mediese onderrig te wees alhoewel 'n vergoedingskaal van £350 per jaar vir die eerste ses maande en £400 per jaar vir die tweede ses maande daaraan verbonde is. Die omvang van die werk wat deur 'n voorlopig geregistreerde geneesheer onderneem kan word, sal afhang van reëls wat deur die Geheime Raad bepaal sal word. Na verwag word, sal elkeen wat voorlopig geregistreer is gemagtig wees om sterftesertifikate te onderteken en om gevaarlike middels voor te skryf. Wedersydse reëlings met die Republiek Ierland is deur onderhandeling getref en dit skyn of soortgelyke reëlings getref sal word met byvoorbeeld Nieu-Suidwallis, die Unie van Suid-Afrika en ander lande.'

THE PATTERN OF THE FOREHEAD FLAP IN RHINOPLASTY

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Although the forehead rhinoplasty is one of the oldest operations known to surgery, the final aesthetic standard generally accepted does not conform with that tolerated elsewhere. Once lining and cover have been provided the bulky and beefy result has been considered an adequate exchange for the pre-operative deformity.

In such cases the imperfection of contour is usually due to a doughy, broad and curved bridge. This is because the release incision of the pedicle has usually been cut in a horizontal direction. The imperfection can be eliminated by making the incision in the form of a deep V with the apex at the new nasal tip. On returning the pedicle to the forehead the V is sutured, two lateral relaxation incisions perhaps being necessary at the upper border of the new nose. This procedure reduces bulk, provides a satisfactory profile line, and narrows the width of the nose. It also results in a narrow tip.

A further advantage of this pattern is the fact that the free-grafted donor area on the forehead is minimal, allowing, if necessary, for eventual elimination by multiple excision.

Mrs. C. M. lost her nose due to lupus (Figs. 1 and 2). Her suffering was as much psychological as physical as her small children were repelled by her appearance. The lupus was controlled by streptomycin, and a forehead flap was brought down (Figs. 3 and 4). After four weeks the V incision was made in the pedicle which was returned to the forehead. The V incision in the new nose was sutured after rotating the upper borders (Fig. 5).

The shape of the profile is under absolute control, depending on the dimensions of the V. Figs. 6 and 7 show the result of the line selected in this particular case.

PREGNANCY TOXAEMIAS

A MODERN APPROACH TO AETIOLOGY, PATHOGENESIS AND TREATMENT

A PRELIMINARY REPORT*

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Although pre-eclampsia is a condition peculiar to the pregnant state and as such falls within the domain of the obstetrician, it should nonetheless be a problem shared by the physician. A hypertensive state with proteinuria and a manifest disturbance of water balance appear *de novo*, as it were, sometimes with alarming rapidity, to challenge our resourcefulness. The desirability for teamwork and for co-operation between our specialties is obvious.

The phrase 'toxaemia of pregnancy' is an unfortunate one and should be discarded. The literature teems with a varied and confused nomenclature in this regard. Terms such as 'Nephritis of Pregnancy, Pregnancy Kidney, Albuminuria of Pregnancy, Hypertension of Pregnancy' and so on have been used loosely to designate pre-eclampsia as well as other ill-defined abnormal pregnancy states. Such usage has rendered a great deal of the literature on the subject statistically valueless. A condition should be called by its proper name and vague terminology should be avoided. Difficulty in diagnosis should not justify the inclusion of these various conditions under a common heading.

Goldring and Chasis [1] employ the following clinical classification of hypertensive states that may be associated with pregnancy.

1. *Specific hypertensive disease of pregnancy.*
(a) Without convulsions—pre-eclampsia.
(b) With convulsions—eclampsia.
2. *Pre-existing essential hypertension.*
3. *Pre-existing glomerular nephritis* or other primary renal disease.
4. *Pre-existing essential hypertension* with superimposed specific hypertensive disease of pregnancy.
5. *Pre-existing renal disease* with superimposed specific hypertensive disease of pregnancy.

SPECIFIC HYPERTENSIVE DISEASE OF PREGNANCY

The condition occurs usually in the third trimester and often in a previously normal person. Its typical clinical manifestations are oedema, hypertension and proteinuria, infrequently with superimposed convulsions or with coma without convulsions. Hypertension as well as oedema may be transitory or absent and proteinuria may appear only later. Oedema may be absent clinically or may be severe enough to dominate the picture. It may become obvious, even gross, rapidly. Gain in weight is an all-important sign and may be noted before oedema, proteinuria or hypertension become manifest. The blood pressure, which is markedly labile, is usually moderate but may be high. If the hypertensive state is severe, retinal changes may occur and the patient may suffer an episode of left ventricular failure. If convulsions occur, the case may resemble one of so-called hypertensive encephalopathy and there is an added danger to the mother and child.

Renal functional changes are interesting.[2] The effective renal blood flow is normal and the filtration rate lowered, quite unlike the renal haemodynamics in essential hypertension. This points to a 'fundamental dissimilarity of the initiating mechanisms' in the production of hypertension in pre-eclamptic pregnancy and other types of hypertension 'which may be associated with, but are not part of the pregnant state'.

Casts may be found but the specific gravity is satisfactory. As a rule the blood pressure returns to normal after delivery and there are no residua. Proteinuria may persist for a time. Recurrence of pre-eclampsia is frequent but not necessarily in successive pregnancies.

RELATIONSHIP BETWEEN PREGNANCY, CHRONIC HYPERTENSION, RENAL DISEASE AND SPECIFIC HYPERTENSIVE DISEASE OF PREGNANCY

1. Pregnancy, or pregnancy complicated by pre-eclampsia, did not cause chronic hypertension. Barnes and Brown [3] carried out a survey of the blood pressures of 915 nulliparous and 1,041 parous women. They found that there was no significant difference in their blood pressures; also, the level of blood pressures in parous women was the same as it would have been had they never been pregnant. They thought that though hypertension might be a common remote sequel of, it was not caused by pre-eclampsia. The hypertension would have occurred in the absence of pregnancy. There was no evidence either that pregnancy permanently aggravated hypertension already existing when pregnancy started. Chesley and Annito,[4, 5] in a study of the interaction of pregnancy and hypertensive disease, concluded that repeated pregnancies were not demonstrably harmful to the hypertensive woman. The pregnancy became hazardous if pre-eclampsia occurred.

Bryans and Torpin [6] in a follow-up study of 243 cases of eclampsia for an average of 12 years found that 21.4% had on a single reading a blood pressure of over 140/90 mm. Hg. The mean age of the patients was 43.7 years, so that the incidence of hypertension did not appear higher than in other women of that

* A paper read at a meeting of the Physicians' Group of the Southern Transvaal Branch of the Medical Association of South Africa on 30 March 1950.

age group, judged by a single reading. In the 20 to 29 age group 8.9% of the patients had a blood pressure of over 140/90 mm. Hg. It was an interesting fact that the incidence of abortion, stillbirths and pre-eclampsia was higher in subsequent pregnancies of pre-eclamptics where the blood pressures were normal than in those whose blood pressures were elevated.

2. In the presence of established hypertension, pregnancy involved a much greater risk of pre-eclampsia. Browne [7] stated that the incidence of pre-eclampsia in chronic hypertensives was 15% to 17%, a figure considerably above that in women who had a normal blood pressure at the start of pregnancy. In such superimposed pre-eclampsia signs were more likely to appear earlier than in the third trimester. In about 40% of hypertensives who became pregnant, the blood pressure fell during the middle third of the pregnancy, but tended to rise later. By the end of pregnancy the blood pressure reached a figure above the pre-pregnancy level in about 50% of the patients. In many the blood pressure was unaffected and in a few it was reduced throughout the whole pregnancy, returning to its former level after delivery. The fall was due largely to the placenta acting as a low resistance arterio-venous shunt.

3. Specific hypertensive disease of pregnancy was predisposed by diabetes as well as by essential hypertension, probably because both accelerated the process of vascular senescence. The incidence of pre-eclampsia was greatly increased in diabetes despite adequate diabetic control. According to Priscilla White,[8] the pre-eclampsia rate was only 2% where the hormonal balance was normal but 50% where the balance was abnormal.

4. The pathogenesis of hypertension in pre-eclampsia was increased peripheral resistance. Page and Ogden [9] and Burwell [10] pointed out that it was remarkable that a normal blood pressure level was maintained in pregnancy despite significant changes of blood volume, blood viscosity and cardiac output. The dynamics of the circulation was disturbed by a variety of factors.

(a) An increase in the vascular system of the uterus with an arterio-venous shunt effect led to a lowering of the total peripheral resistance and the diastolic pressure, with an increase in pulse pressure.

(b) An increase in total blood volume, up to 42% at one time, tended to accelerate the circulation and to increase the cardiac minute output with a rise in oxygen consumption.

(c) A decrease in blood viscosity lowered the blood pressure slightly.

(d) The venous blood pressure was elevated in the pelvis and the lower extremities.

(e) Blood leaving the gravid uterus contained more oxygen than did blood from the right ventricle, i.e. blood irrigating the placental and uterine structures exhibited a lower arterio-venous difference.

In uncomplicated pregnancy the variety of contrary phenomena was approximately compensated so that the blood pressure, pulse rate and venous pressure were within the limits of normal. There appeared to be a re-distribution of blood with vasoconstrictor influences operating in certain areas balanced by lowered resistance in others such as the uterus. Kyrieleis and Schroeder [7a] had actually suggested a narrowing of retinal arterioles in normal pregnancy. A decrease in capillary flow in the nail beds had also been observed. It would seem, therefore, that neither increase in cardiac output nor other change mentioned as operating physiologically in normal pregnancy could be responsible for the rise in the blood pressure level in pre-eclampsia except increase in total peripheral resistance which was the immediate cause of the blood pressure elevation. The effect was functional, not organic, for the blood pressure was markedly labile and dropped to normal after delivery.

The source of the pressor effect was a matter of speculation. Was it placental in origin? A search for such a substance in eclampsia had led to repeated failures.

5. *Pregnancy and renal disease.* Pregnancy was uncommon in the patient with glomerulo-nephritis, but should pregnancy occur, abortion was the rule.[1] Pregnancy might, however, continue to term uncomplicated. If pre-eclampsia became superimposed, neither the pregnancy nor the specific complication necessarily aggravated the underlying renal disease. Renal disease was neither the cause nor a sequel of specific hypertensive disease of pregnancy. They might be coincidental but did not share a common genesis.

EXPERIMENTAL ECLAMPSIA

Dieckmann [11] was of the opinion that the results of animal experimentation were not of value in the elucidation of the problem of pre-eclampsia because the human patient did not have a 'Goldblatt' kidney. Nevertheless, studies carried out by Dill and Erickson,[12] Rodbard and Katz [13] and Greene [14] are of interest. Experimental renal ischaemia was produced in pregnant dogs by the Goldblatt technique. After relatively slight constriction of the renal arteries there followed weakness, lassitude, convulsions, hypertension, haematuria, albuminuria and nitrogen retention. Coma and death ensued in from five to 15 days. In non-pregnant controls the production of such mild renal ischaemia often caused no symptoms. Hypertension was observed only after the renal clamps were tightened further. Where typical eclampsia developed, abortion resulted in a rapid improvement and full recovery except for a slight residual hypertension. Autopsy findings in the eclamptic dogs showed a close parallel with those in human eclampsia. In rabbits the toxic symptoms were very marked. These writers suggested the probability of a correlation between the physiological and pathological processes underlying these observations and the mechanism of eclampsia in human patients.

THE ROLE OF INTERNAL SECRETIONS IN THE PATHOGENESIS OF PRE-ECLAMPSIA

For more than 20 years G. and O. W. Smith [15-28] have been conducting a vast programme of research into the relationship between the hormones and the late pregnancy toxaemias. A number of interesting facts has emerged as a result of their studies. The possible effect of individual hormones is considered briefly.

1. *Anterior Lobe of the Pituitary.* There was no convincing evidence that patients with pre-eclampsia differed from normal women in respect of pituitary gonadotrophic hormone, though a thyrotrophic hormone-like substance was found in the urine of eclamptics. Subnormal levels of adrenotrophic hormone were evident in seven of eight women with severe pre-eclampsia.

2. *Posterior Lobe of the Pituitary.* Concentrates of urine from pre-eclamptics exerted an increased antidiuretic effect not obtained from similar extracts in late pregnancy normals. A similar principle was found in the blood and placentas of pre-eclamptics.

3. *Pancreas.* The incidence of pre-eclampsia was greatly increased in diabetics in spite of adequate diabetic control. Though in both conditions the hormonal levels were similarly abnormal, foetuses from diabetic and pre-diabetic mothers had an increased tendency to be overweight, while foetuses in pre-eclamptics were under-weight rather than overweight. Barns and Morgans [29] suggested that an increased production of diabetogenic growth-promoting complex of the anterior pituitary might be a factor for the increase in size of the foetus and the foetal mortality rate as well as for the diabetes. This suggestion might be sound, but the hormone was not likely to be the main factor in the genesis of pre-eclampsia. One thinks rather that the disturbance in water balance and the factor of intracellular dehydration are related to the increase in the incidence of pre-eclampsia in diabetes.

4. *Adrenal Cortex.* In normal pregnancy the adrenal cortex was increased in size. In six cases of eclampsia Smith and Smith [15-28] found that the cortex was small. Reference will be made to this matter later.

5. *Placenta.* Dexter and Weiss [30] suggested the possibility that the placenta produced a water-retaining hormone and also a vaso-constrictor substance. An antidiuretic substance had, in fact, been found in the blood and placentas of pre-eclamptics.

(a) *Chorionic Gonadotrophin.* This was found in the urine and placentas of pregnant women and in excessive amounts in the blood, urine and placentas of patients with pre-eclampsia. The increase was not accountable to an increase in pituitary gonadotrophic hormone which differed from chorionic gonadotrophin in some respects. An increase was associated, too, with stillbirth and premature delivery in the absence of signs of pre-eclampsia. Chorionic gonadotrophin was elevated normally during the last month of pregnancy, but an earlier and progressive elevation developed in women who later showed signs of pre-eclampsia. Priscilla White [8] carried out similar studies in pregnant diabetics and found that a rise was always followed by clinical abnormalities. The results obtained by other investigators were not so clear cut.

(b) *Progesterone.* Progestational activity was repeatedly detected in placental extracts and a urinary excretory product of progesterone, pregnanediol glucuronidate, was studied in normal pregnancy and in pre-eclampsia. It was found that urinary pregnanediol in pre-eclampsia was low. In 14 normals there were progressively increasing values between the 28th and 36th weeks, whereas in 21 pre-eclamptics values steadily decreased.

Progesterone decreased the destruction of both administered and secreted oestrogen, so that measurement of urinary excretion of oestrogen metabolites provided more information concerning secreted progesterone than did determination of urinary pregnanediol. In 50 cases prior to the development of pre-eclampsia, or premature delivery, or intra-uterine death, evidence was found for progressive progesterone deficiency before as well as during the clinical abnormality. White and Hunt [31] used pregnanediol determination prognostically in 43 patients who were receiving oestrogen and progesterone in treatment.

(c) *Oestrogens.* These are formed by the placenta and found in increasing amounts in the blood as pregnancy advanced, even after removal of corpus luteum and all ovarian tissue early in pregnancy. Estrogenic activity reached a peak in the last month and diminished rapidly before the onset of labour, becoming negligible within three days after delivery. It appeared, according to the Smiths,[15-28] that premature ageing of the placenta in pre-eclampsia and in premature delivery resulted in a premature deficiency in secretion of progesterone and oestrogen. The low urinary levels found were not accountable to renal retention or change in conjugation. At term, and earlier in pre-eclampsia, there appeared to be failing utilization of chorionic gonadotrophin to account for increased amounts in the circulation. On the hypothesis that oxidation products of the oestrogens caused utilization of chorionic gonadotrophin for placental secretion of its steroids, the Smiths [15-28] investigated the effect of oestrogen products in preventative treatment. It appeared that utilization of chorionic gonadotrophin was enhanced and premature ageing of the placenta in steroid secretion as well as late pregnancy complications were averted.

6. *Thyroid.* On the theory that hypothyroidism with hypercholesterolaemia produced placental arterial disease leading to thrombosis, infarction and degeneration of the placenta, thyroid medication was tried. The clinical results did not indicate specificity of therapy or suggest that thyroid hypofunction played a role in the causation of pre-eclampsia. Another theory suggested increased thyroid activity aetiologically in this condition. Pre-eclampsia may or may not develop in hyperthyroidism.

Experimentally, Selye [32] showed that thyroidectomy inhibited the nephrosclerotic and allied actions of deoxycorticosterone acetate and diminished the potency of anterior pituitary extract. Thyroxin treatment sensitized the rat to the nephrosclerotic action of both D.O.C.A. and anterior pituitary, i.e. although the thyroid was perhaps not indispensable for the production of nephrosclerosis, etc., its hormone facilitated their development.

THE ROLE OF WATER AND ELECTROLYTE BALANCE IN THE PATHOGENESIS OF PRE-ECLAMPSIA

The early recognition historically of a disturbance in water balance and the association of clinical oedema with pre-eclampsia were emphasized by Dodge and Frost.[33] They quoted Rosenstein in 1874 as stating that cerebral oedema in eclampsia was due to effusion of serum from a too watery blood. Carpentier in 1887 thought that diminished albumin in the blood was the predisposing cause of eclampsia, while Willoch in 1925 and Bingham in 1932 stressed the universal occurrence of water retention and excessive gain in weight in that condition. The cause of the oedema was stated by Anselmino and Hoffman to be due to an excessive production of pituitary antidiuretic substance, while Fitzgibbon thought that primary renal disease was the important factor. Eufinger indicted instability of the plasma colloids, Poten pressure of the enlarged uterus on the ureter and de Snoo an excess ingestion of sodium chloride.

Strauss [34-40] carried out a number of investigations (1935-1938). Plasma proteins and venous pressure levels were studied in the normal non-pregnant woman, the pregnant woman and in the pre-eclamptic and the eclamptic patient. He came to the following conclusions:—

1. Plasma proteins were lowered during pregnancy and markedly in pre-eclampsia. The albumin fraction which had four times the osmotic pressure of the globulin fraction was particularly reduced.

2. Water retention was a manifestation of pre-eclampsia and was due partly to lowered osmotic pressure of plasma proteins usually in the presence of an increased venous pressure.

3. The signs and symptoms of pre-eclampsia resulted from water retention induced by sodium salts in the presence of hypoproteinaemia.

4. With or without manifest oedema, water retention was present in greater or lesser degree in most pregnant women during the last trimester. This might amount to as much as 10% of the body weight.

5. Hypertension, and pre-eclamptic manifestations such as oedema, headache, drowsiness and visual disturbance might be relieved by means which eliminated undue water retention. The study of the behaviour of pregnant women with

hypertension after changes in water balance might therefore serve to differentiate true pre-eclampsia from primary hypertension or vascular-renal disorders.

6. The development of pre-eclampsia could probably be prevented by maintaining the pregnant woman's plasma proteins at a normal level by adequate diet.

It was significant that a League of Nations report on the protein requirements of pregnant women stated that some animal protein was essential and that in the growing period should form a large proportion of the total protein. The daily amount suggested was 1.5 gm. per kilo of body weight after the fourth month.

Chesley and Annitto [41] pointed out that it was generally accepted that water retention was a significant factor in the development of pre-eclampsia and that sodium chloride restriction was of benefit in treatment. There seemed to be a difference of opinion, however, whether water should be restricted, increased or ignored. Arnold and Fay [42] advised strict limitation, whereas Alvarez [43] advocated forcing of fluids. It had been shown that sodium chloride restriction reduced the incidence of pre-eclampsia in clinically normal patients with occult oedema. If fluid intake was simultaneously increased, the incidence was lower than if both sodium chloride and fluid were restricted. The loss of body weight under sodium chloride restriction was presumed to represent in part the loss of extracellular fluid, because depletion of sodium caused an equivalent loss in extracellular fluid. This fluid might go either out of the body or into the cells. Thus, intracellular hydration or dehydration might be an important factor which was altered by sodium chloride restriction. Chesley and Annitto [41] compared fluid and weight loss under the regime of salt restriction and increased fluid intake. They found that 14 patients lost water and weight and that in all but two the water loss was greater than the weight loss. In nine, the weight of water lost was more than twice the loss in body weight. In 15, there was loss of extracellular fluid while the patients were gaining weight. This suggested that extra-cellular water might transfer into the cells when sodium chloride was restricted. They contended that in the last weeks of a normal pregnancy there might be a shift of intracellular fluid into the extracellular space. This shift might be exaggerated in pre-eclampsia.

McPhail [44] believed that a central feature of pre-eclampsia was cell dehydration in the presence of extracellular oedema and that 'treatment should be directed primarily towards hydrating the cells'. Parks [45, 46] reported the control of oedema by giving potassium to patients who had not responded to low sodium intake. Potassium is an important intracellular electrolyte.

It was maintained that sodium chloride ions were largely confined to extracellular fluid so that restriction of sodium chloride intake might be expected to diminish the osmotic tension of the extracellular fluid. As the osmotic equilibrium between cellular and extracellular fluid was maintained by the shift of fluid to cells and by diuresis, the forcing of fluid together with sodium restriction should accelerate both. If, therefore, the benefit depended on cellular rehydration, changes in volume of extracellular fluid need not be correlated with the effectiveness of the measures adopted in preventing pre-eclampsia. Normally, extracellular fluid was held by a retained equivalent amount of electrolyte to maintain isotonicity. In a patient developing pre-eclampsia an increased fluid intake should be harmless as long as electrolyte, i.e. sodium was restricted. Fluid was the best diuretic and extracellular electrolytes were swept away via the kidneys.

It followed, therefore, that increased intake of fluid with restriction of salt should rehydrate the cells if they were dehydrated and reduce the volume of extracellular fluid. Patients under this regime did in fact show the lowest incidence of pre-eclampsia.

In a very recent paper Dieckmann [11] and others reviewed the question of water balance and came to similar conclusions. They thought that pre-eclampsia was not due to a circulating 'toxin', but that it resulted from an inability to eliminate water and electrolytes. They were amazed to find that many pre-eclamptics were able to tolerate sodium orally or intravenously in large amounts without clinical manifestations as long as they were able to eliminate it in the urine and as long as chloride intake was less than 1 gm. in 24 hours. A few gained weight rapidly on this regimen and had headache, dizziness, diplopia, visual disturbance, raised blood pressure and albuminuria. Large amounts of water alone or intravenous glucose might also produce convulsions and coma.

In pre-eclampsia injections of posterior pituitary extract led to water retention and convulsions. In addition to possible retention of water intra- and extra-cellularly, it should be remembered that fluid might be contained in various compartments with capsules such as the brain with its dura and the kidney with its capsule. The resulting increase in pressure might lead to failure of water to reach the kidney even in the presence of anasarca. In the pregnant patient there was delayed excretion of urine and this was greatly intensified in pre-eclamptics; oliguria or even anuria might occur.

It was found that normals at term had a urinary output amounting to 67% of the output in non-pregnant normals, whereas, in eclamptics the figure was 17%. The writer's own observations in this respect bore a striking resemblance to those of Dieckmann and his associates.[11]

The behaviour of the patient with regard to elimination of ingested fluid offered a better criterion for a diagnosis of pre-eclampsia than did a raised blood pressure level or proteinuria. Routine phenolphthalein estimations carried out on all cases in the 'toxaemia' wards of the Queen Victoria Hospital, Johannesburg, revealed a group who showed a delayed fluid excretion. In the first 15 minutes and often in the second 15 minutes or even in the second hour, urinary excretion was minimal. In the opinion of the writer this finding was of prime significance in diagnosis and prognosis. In the patient with essential hypertension, unless pre-eclampsia were superimposed, the volume of urine excreted under these test conditions was well within the range of the pregnant normal.

Apart from changes in output due to the effect of

antidiuretic substance, Dieckmann [11] made the following interesting observations. There was an increased venous pressure in the lower half of the body due to an arterio-venous shunt effect through the placenta and also due to an increasing pressure on the abdominal veins as pregnancy advanced. These effects caused the lower half of the body to act as a water depot. It followed that the highest urinary output was obtained with the patient in the horizontal position when fluid returned more easily from these tissues. The ratio between the night and day secretion of urine might under these circumstances exceed unity. If the fluid thus lost to the tissues by day became so great that it could not all be re-absorbed during the night, oedema in the lower extremities would occur. In fact 82% of pre-eclamptics gave a positive modified Kepler test. Post partum, the position became normal. Thus, if the output was comparable to that found in essential hypertension, the case was not one of eclampsia. Fluid administered intravenously gave similar responses showing that decrease in urinary output and delay in excretion in pre-eclamptics were not due to faulty absorption from the intestine.

It was noteworthy that oedema might develop within a few hours without the ingestion of water. Intracellular fluid might be held in the body and produce a gain in weight and then as a result of a shift extracellularly became manifest as oedema. Fluid in the living organism was in a dynamic state and its movement or distribution was affected by variations in the amount of sodium, potassium and chloride in the intra- and extra-cellular fluids. Any abnormal condition which interfered with water or cell metabolism might intensify the normal delay in water and electrolyte excretion. Thus anaemia, low serum albumin, multiple pregnancies, hydramnios, cardiac disease and so on might play a part in the pathogenesis of pre-eclampsia.

The stimulus to urinary excretion was increased fluid in the blood. Secretion depended on an abrupt blood dilution and a decrease in the concentration of circulating antidiuretic substance. 'Water diuresis', the writers assert, 'is a condition of physiological diabetes insipidus . . . and liberation of antidiuretic substance is mainly and continually governed by the contemporary concentration of sodium chloride in the carotid arterial plasma'. Apparently a change of 1% in the osmotic pressure led to a 1000% change in water excretion. If the antidiuretic substance were increased, excretion of water might be delayed from two to 10 hours. A constant diuresis prevented the stimulus for release of antidiuretic substance. It could be mentioned in passing that water retention might also conceivably by local action impair the detoxifying function of the liver for antidiuretic and other substances.

THE AETIOLOGY OF PRE-ECLAMPSIA—AN ATTEMPT AT SYNTHESIS

The writer's interest in the aetiology of pre-eclampsia was first stimulated in the early 1920's at Liverpool University. During a short winter spell of intense cold several cases of pre-eclampsia were admitted to hospital in quick succession. Many had convulsions and in one case the urine boiled solid. The interest at the time lay in a possible common aetiological factor in these patients. The freezing weather seemingly played a part. The question what part it played remained unanswered.

Two years ago, on a renewal of an interest in the subject, one was quite forcibly struck by the resemblance of some aspects of the behaviour pattern of the pre-eclamptic and that of the experimental animals in Selye's adaptation syndrome. Was pre-eclampsia indeed a disease of adaptation? The idea seemed worth pursuing. Selye [32] carried out numerous experiments which showed that sudden or chronic exposure to stress such as cold, injury, infection, chemicals, nervous strain and so on, elicited a reaction of 'alarm' followed by an 'adaptation syndrome'. He showed that the reaction to various non-specific stimuli resulted in enlargement of the adrenal cortex and increase in adrenal cortical output. This overproduction of corticoids might be a defence mechanism and might be useful in raising the resistance of the body to stress; but detrimental side effects might occur 'due to inherent toxicity of the corticoids'. It was a defence reaction which partly defeated its own purpose. Selye [32] showed, too, that over-dosage with salt-active corticoids such as deoxycorticosterone acetate (D.O.C.A.) caused sodium retention accompanied by hypochloraemia and hypopotassaemia, and it appeared probable that these corticoids produced organ changes by virtue of their salt retaining property.

This was supported by the observation that animals kept on a high sodium intake were particularly sensitive to the toxic effects of D.O.C.A. Was it then possible that pre-eclampsia was the 'result of a derailed or excessive adaptive reaction on the part of the adrenal cortex in producing disproportionate amounts of salt active corticoids?' Experimentally, clinical symptoms and signs which might follow an over-production of these products included hypertension, oedema and increase in urinary potassium. The gluco-corticoids on the other hand, especially 17-hydroxy-11-dehydrocorticosterone (compound E) were found by Selye [47] to have an inhibitory action on the salt active corticoids. Thus, in the production of formalin arthritis it was found that the joint swelling was very mild if cortisone or cortisone plus D.O.C.A. were given but very marked if D.O.C.A. or no hormone was administered. Adrenocorticotrophic hormone had an effect similar to that of cortisone. The apparent antagonism between D.O.C.A. on the one hand and cortisone and A.C.T.H. on the other was difficult to explain. Selye [48] postulated that D.O.C.A. might prevent cortisone from reaching its target organs. The effect of cortisone was non-specific and might benefit other conditions besides arthritis. It is of interest that desoxocortisone or Reichstein's compound S, the naturally occurring corticoid corresponding to D.O.C.A., has been shown by Selye [48] to be highly active in the production of a raised blood pressure and organ changes typically seen as toxic effects of D.O.C.A. 'The data are interpreted as further evidence supporting the view that naturally occurring corticoids may be involved in the pathogenesis of these diseases

of adaptation which respond favourably to therapy with gluco-corticoids or A.C.T.H.'

It is suggested that pre-eclampsia is a disease of 'adaptation'. A non-specific insult such as cold, infection, chemical or other intoxication, nervous strain and so on initiates enlargement of cortex and increase in hormonal output especially that of the salt active corticoids. This primary stimulus may have its genesis also in alteration of placental metabolism due to ischaemia. The important factors seem to be the non-specificity of the primary insult and its aetiological variety. The excess production of salt-active corticoids results in sodium retention and in potassium deprivation, a circumstance favouring extracellular hydration and intracellular dehydration.

In normal pregnancy the adrenal cortex is increased in size. This situation occurs in the first stage of the alarm reaction and is considered to be a defence mechanism. In six cases of eclampsia, the Smiths [25] found that the cortex was small and postulated a cortical exhaustion in that condition.

In the blood and placentas of pre-eclamptics an anti-diuretic substance has been isolated in abnormally increased amount. A vicious circle is initiated. Antidiuresis results in an increase in blood sodium chloride which in turn stimulates the production of pituitary anti-diuretic substance. Oliguria or anuria may follow unless dilution of blood sodium chloride is resorted to. Loss of potassium may be an important factor in cellular dehydration and in the production of oedema by encouraging a shift of fluid from cells to extra-cellular tissue. Oedema and cellular dehydration may both be combated by giving fluid which, by its diuretic action rids the body of salt and water and lowers the osmotic tension of extracellular fluid. Dieckmann and his associates [11] recommend the ingestion by the patient of 150 cc. to 200 cc. of water hourly to promote better elimination of sodium and water. This favours a shift back to the cells. It may be advisable even to administer potassium routinely to these patients to increase cellular osmotic tension.

Further hormonal imbalance consists chiefly of an increase in chorionic gonadotrophin and a decrease in oestrogens and pregnanediol. The changes in the placenta are similar to but more marked than those in the normal placenta at term and involve primarily degeneration of the syncytial cells which probably secrete the steroid hormones. They are present prior to clinical manifestations in pre-eclampsia and are episodal rather than causal. The Smiths,[15-28] on the hypothesis that oxidation products of the oestrogens caused utilization of chorionic gonadotrophin for placental secretion of its steroids, used oestrogen products in preventive treatment.

The approach the writer would like to suggest is, first, to endeavour to avoid or combat primary noxious stimuli; second, to deal with factors which might upset water balance; and third, to administer cortisone or a cortisone substitute to neutralize or mollify the vicious effects of the salt-active corticoids.

Towards that end and in addition to other therapy as indicated, the employment of a steroid such as oestrogen or progesterone together with ascorbic acid as an oxidiser is recommended in the treatment of pre-eclampsia.

SUMMARY

1. The features of specific hypertensive disease of pregnancy are described and an attempt made to clarify its relationship to essential hypertension and renal disease.

2. Analysis is made of the part played by the endocrines in the pathogenesis of pre-eclampsia.

3. The role of water and electrolyte balance is stressed, and the observation made that the behaviour of the patient with regard to elimination of ingested fluid is the best criterion for the diagnosis of pre-eclampsia.

4. The suggestion is put forward that pre-eclampsia is a 'disease of adaptation' and that the toxic effects produced by excessive salt active corticoids may be controlled by means which restore normal water balance.

5. The employment of cortisone like substances is advocated.

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RADIOLOGICAL CASE BOOK. XXXI

TUMOURS AT THE PULMONARY APEX

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Since 1924 when Pancoast first drew attention to what he regarded as a new entity, much has been written about the etiology and pathology of the 'superior pulmonary sulcus tumour'. Many cases describing tumours of the Pancoast type, have been recorded in the literature and a great variety of pathological lesions has, at different times, been found to be responsible for this symptom-complex. Included amongst these lesions are the following:—

1. Primary carcinoma of the peripheral bronchioles (regarded as the commonest cause of the symptom-complex).
2. Metastases, e.g. from the breast, kidneys or stomach.
3. Sarcoma of the thymus.
4. Sarcoma originating near the pulmonary apex.
5. Inthrathoracic sympathoblastoma.
6. Spinal cord tumours.
7. Meningeal tumours.
8. Neoplasms of the vertebrae, etc.

It is to-day established that a number of different lesions, benign as well as malignant, occurring at the pulmonary apex, may produce the Pancoast symptom-complex of:—

1. Pain and soft tissue atrophy in the distribution by the brachial plexus;
2. Horner's syndrome;
3. A mass at the lung apex and
4. Evidence of bone destruction on X-ray.

RADIOLOGICAL FINDINGS

1. *The Shadow.* An area of opacity at one or other lung apex, is a fairly constant finding on the chest X-ray.

This shadow may be:—

(a) Well-defined, e.g. in benign lesions—Fig. 1, a proved case of *neurofibroma* of the lung;

(b) Ill-defined, e.g. in malignant lesions—Fig. 2, a proved case of *primary carcinoma* of the lung;

(c) Of maximal density, e.g. in benign as well as malignant lesions—Figs. 1 and 2.

(d) Of minimal density, e.g. in malignant lesions—Fig. 3, a proved case of *primary carcinoma* of the lung.

(e) Lobulated and

(f) Calcified, e.g. in benign lesions—Fig. 1.

2. *Bone Destruction.* Rib or vertebral erosion in the neighbourhood of the lesion, is often present, and may actually be:—

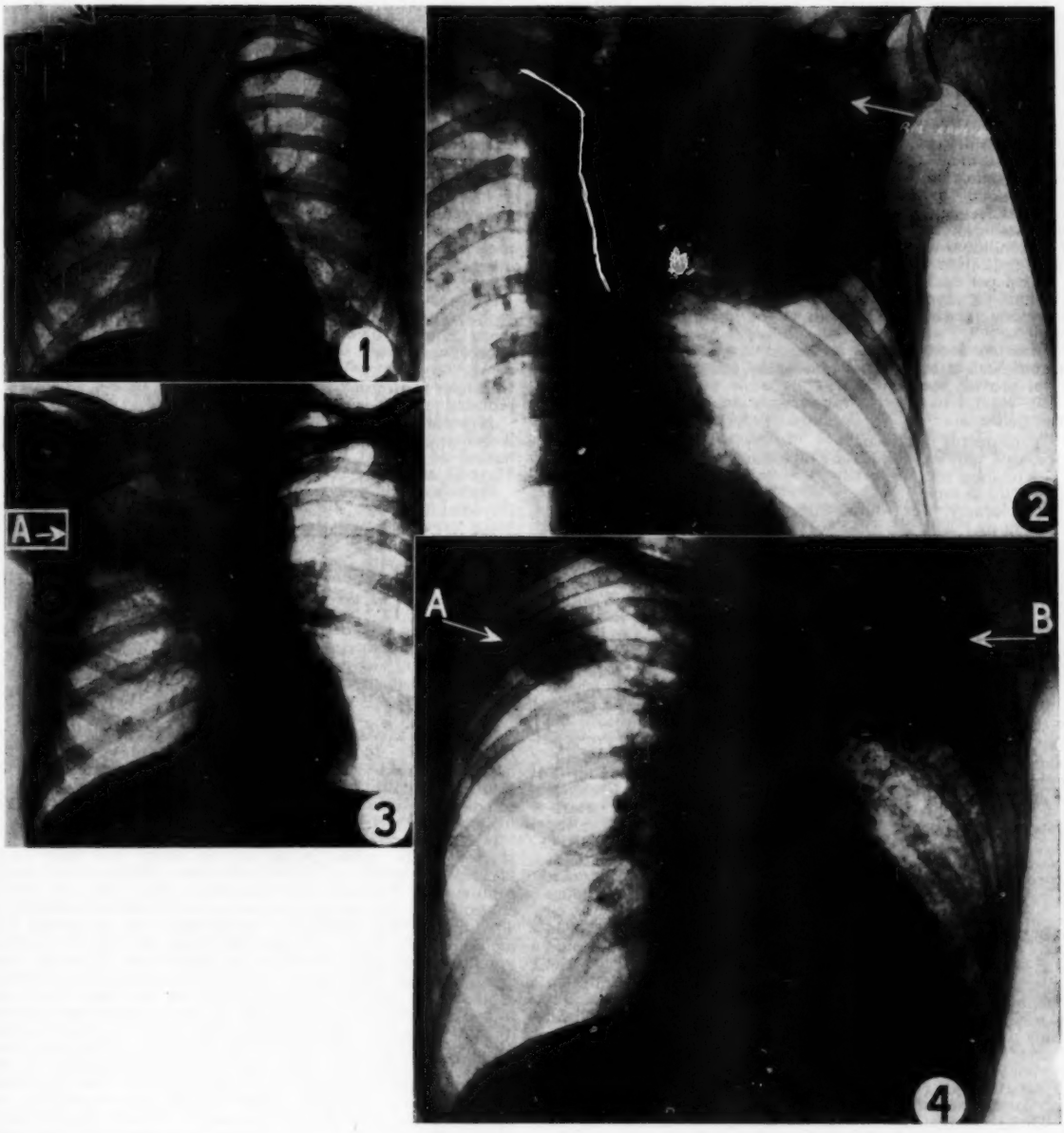
(a) The dominant radiological feature, e.g. Fig. 3.

(b) Minimal, e.g. Fig. 2.

(c) Even absent, e.g. Fig. 4, a proved case of *primary carcinoma* of the lung.

Bone destruction may occur in benign as well as malignant lesions as illustrated by the accompanying X-rays, and may occur early or late.

3. *Metastases.* Originally Pancoast was of the opinion that the 'superior pulmonary sulcus tumour' showed no tendency to metastasize. Metasteses are



now known to occur, e.g. Fig. 4, a proved case of *primary carcinoma* of the left lung with a secondary deposit in the right lung.

CONCLUSIONS

1. Superior sulcus tumours producing the so-called Pancoast-symptom-complex may be benign, primary or secondary malignant tumours.
2. The clinical features are well known.
3. The radiographic findings of shadow, bone destruction and metastases may vary a good deal, and any one may dominate the picture.
4. In many instances the differential diagnosis between benign and malignant lesions can be made on the X-ray appearances, but often this is not possible. The demonstration of bone erosion by itself does not justify the diagnosis of malignancy.
5. The clinical, radiographic and histological findings all play an important part in the diagnosis of lesions at the lung apex.

VERENIGINGSNUUS : ASSOCIATION NEWS

ANAESTHESIA IN CARDIAC SURGERY*

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As the history of the development of surgery is traced it becomes evident that as its field widened newer and more exacting demands were made upon the anaesthetist. To these demands he has responded readily, though not always immediately, and now he faces his latest problem, the anaesthesing of the 'cardiac' patient, for the curing by surgery of a condition which hitherto had been considered a strong contra-indication to the administration of an anaesthetic.

This paper deals briefly with the approach to the anaesthetic problems of cardiac surgery; the routines and techniques described are but endeavours to find a reasonably safe solution.

What has been evolved is the outcome of past experience, and although it has proved reasonably satisfactory it does not as yet provide the ideal.

The conditions one is most likely to be called upon to anaesthetize are:—

1. Patent ductus arteriosus.
2. Fallot's tetralogy (Blalock's operation).
3. Coarctation of the aorta.
4. Pericardectomy.
5. Valvulotomy, for mitral insufficiency caused by mitral stenosis.
6. Intracardiac catheterization.

General Considerations. It is advisable to obtain a composite picture of the patient. The length of history of the disease and the disability it has imposed should be noted, together with the patient's tolerance of exercise. If cyanosis is present it should be shown whether this is increased by exercise and whether the administration of pure oxygen decreases the degree of cyanosis. This latter is of importance, for frequently it indicates whether the operation is likely to prove of benefit to the patient. Clubbing of the fingers should also be noted, for this denotes not only disease of long standing but also the probable presence of poor peripheral circulation.

A further point to note is any degree of enlargement of the heart which is fairly indicative of the myocardial function.

The blood picture, too, is of importance, for in the presence of a polycythoemia the routine use of blood would be contra-indicated except to replace an excessive loss of blood during the course of the operation.

Anaesthetic Desiderata and Technique. An anaesthetic is chosen that will cause the least physiological disturbance, permit of a rapid return to consciousness and allow a maximum concentration of oxygen to be used.

Therefore those anaesthetic agents which are eliminated slowly or cause marked depression of the cerebral centre should be avoided, for it must be borne in mind that during the whole period that the chest is 'open', controlled respiration is maintained not only to ensure adequate oxygenation but also to facilitate the work of the surgeon.

This paper deals with a series of:—

i. Nine cases of patent ductus arteriosus, with ages ranging from eight to 31 years.
ii. Four Blalock's operations, in patients aged seven to 32 years. (One patient had the operation performed on both sides.)
iii. Three coarctations of the aorta (ages from eight to 24 years).

There were three fatalities in this series, none of which however, occurred 'on the table', death supervening from six to 72 hours post-operatively due presumably to the hazards or complications of the operation.

Premedication. For children, paraldehyde per rectum was the most suitable agent, for apart from its soporific action, in normal dosage, it caused no depression of respiration. In the earlier cases 0.75 drachms per stone of body weight dissolved in an equal number of ounces of N. saline was employed, and was administered one hour before operation. Latterly a dosage of 0.5 drachms per *stone* of body weight has been used as it allowed a more rapid recovery, and though the patients were not soundly asleep on this dosage they were sufficiently sleepy to permit induction of the anaesthesia to be carried out with little resistance.

Atropine gr. 1/100 to gr. 1/75, according to age, was given half an hour before operation.

In adults, a distinction was drawn between cases of cyanosis and those in which breathlessness and fatigue occurred on exertion. In these cases the paraldehyde-atropine sequence was followed.

In the other cases omnopon gr. 1/3 with scopolamine gr. 1/150 was given one and one-quarter hours before operation, followed by induction with Pentathol Sodium (± 0.5 gm.).

Maintenance Technique. In all cases, the anaesthetic then used was Cyclopropane, alone or with minimal amounts of ether, to such a depth as to permit of intubation without causing any respiratory disturbance.

Thereafter ether was discontinued and anaesthesia maintained with cyclopropane until the chest was about to be opened, when Flaxedil or d-tubo-curarine chloride (Curare), the dose according to age, was administered in sufficient quantity to cause respiratory arrest. Controlled respiration was then maintained, any deficiency in the volume of the circuit being replaced by oxygen.

It was rarely necessary to add any more gas to the circuit, it being possible to maintain the control for a considerable period of time. When necessary additional quantities of Flaxedil or Curare were injected.

Periodically at intervals of about three-quarters of an hour the operation was stopped to allow of the collapsed lung being expanded fully for some two to three minutes. Upon closure of the chest wall, the collapsed lung is fully expanded and kept so until the chest wall is sutured and rendered air tight. At this stage it was found that the normal respiration was readily re-established, and recovery from the anaesthetic was allowed to follow, oxygen only being administered.

The above is but a brief description of the routine applicable to practically all intrathoracic operations.

The special factors which arise in cardiac cases are the tendency to tachycardia and fibrillation occasioned by the manipulation of the great vessels of the circulation near to the heart.

Tachycardia has been a very constant factor, the heart rate rising rapidly to 160 beats per minute as soon as any manipulation is started. It is only after some time that fibrillation tends to follow.

This then brings us to the consideration of the *adjuvants* to anaesthesia.

(a) Procaine: As a routine, an intravenous drip of 5% glucose in N. saline is set up, to which has been added Procaine to make a 1:1,000 solution. (Fifty c.c. of a 2% solution of Procaine per vacolitre.) The rate of flow is controlled so that during the preliminary procedures it is about 40 drops to the minute but when the chest is opened it is increased to a rate of 1 gm. per hour, or 1,000 c.c. From practical observation there is no doubt that Procaine is of great value in these cases. It tends to reduce the irritability of the heart and so cause a slowing of the heart rate when tachycardia has already occurred; it thus reduces the tendency to fibrillation. It appears to exercise some anaesthetic action, for in the majority of cases it has been found that once controlled respiration has been established, the addition of any further anaesthetic agent (e.g. Cyclopropane) into the circuit has not been necessary even though the operation has proceeded for four hours afterward. That it has a direct action was proved on one occasion when auricular fibrillation occurred. Five c.c. of a 2% solution of Procaine was injected directly into the heart, and within a minute the fibrillation had ceased and the heart took on a regular though rapid rhythm.

(b) Blood: In most of the congenital hearts suggestive of Fallot's tetralogy it was found that marked polycythaemia was present. Therefore the addition of more blood into the circulation is highly undesirable, tending to increase the possibility of thrombosis at the site of anastomosis of the subclavian artery and the pulmonary artery, or within the lumen of either of these vessels.

Blood should always be available, however, to replace any excessive loss during operation, and then the amount given should be sufficient only to restore the circulation to normal.

* A paper read at a Group Convention of the South African Society of Anaesthetists held on 5 August 1950.

Post-operative Treatment: The administration of oxygen particularly after a Blalock's operation should be continuous, the patient being returned to the ward with a B.L.B. mask *in situ*. He is then nursed in an oxygen tent.

Coramine is the stimulant of choice. The glucose-saline-procaine drip is continued if necessary at a rate of 40 drops per minute, and breathing exercises are initiated at the earliest opportunity.

The tachycardia which appears to be a persistent factor in these cases gradually resolves itself; if it appears to persist, it is best treated with Digoxin. In the few recent cases where the patient has been given Digoxin pre-operatively in an attempt to control this tachycardia, the results suggest that it is of value, but there is not sufficient experience as yet to warrant the expressions of any definite views on the matter.

Intracardiac Catheterization. Anaesthesia for this procedure, especially where it is desired to obtain an estimation of blood gases, etc., requires special consideration. Obviously inhalation anaesthesia is not desirable, nor are agents likely to affect the metabolic rate. It is suggested therefore that the rectal administration of Paraldehyde (1 drachm per stone body weight) combined with an analgesic level of Trilene should prove satisfactory.

Conclusion and Summary. As yet anaesthesia has not been administered for an operation of Vulvulotomy but the principles already enunciated must apply. Brock *et al.* (Brit. Med. J., 1950) records eight such cases with two deaths; in the majority of cases the anaesthetic sequence was Thiopentone, Cyclopropane, ether and Curare. The patients were all adult.

The opinions expressed here are the outcome of a limited experience in this type of work, and that all the cases in this series were done in nursing homes where one is unfortunately restricted in one's approach to the subject.

There is much work still to be done. It seems that where cyanosis is present, the lowering of the metabolic rate during operation would be of advantage. The deliberate lowering of the blood pressure by pentamethonium iodide during operation, the substitution of scopolamine for atropine, and other methods are being contemplated. It is hoped that these and further considerations will be embodied in a subsequent paper.

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I do not propose to say much on the history of cardiac surgery except to remark that it goes back only a very few years, in South Africa particularly.

Our colleagues the surgeons are the first to acknowledge their debt to us, the anaesthetists, and I think that in this branch of surgery more than any other team work is of vital importance. There should always be a consultation in these cases of the surgeon, physician and anaesthetist. I believe that the anaesthetist is not acting outside his province if he makes sure that all available aids to diagnosis have been applied; he takes the responsibility should anything unfortunate occur during the operation, and it is a pity to submit a patient to what may be a very serious risk when the condition he is suffering from is not amenable to surgery. The type of case I have in mind is, say a Fallot's tetralogy in which a patent ductus is present. In most cases this condition could be definitely diagnosed before operation, particularly with the aid of thoracoscopy and angiocardiography.

A rough classification of cardiac surgery as it affects the anaesthetist is as follows:—

(a) Cardiac damage or embarrassment is present.
(b) The above may be present, but there is also cyanosis.
(c) The heart is virtually normal.

The first two groups often demand a high degree of skill and effort on the part of the anaesthetist, whereas the third group is often within the scope of any anaesthetist who is familiar with the principles of controlled respiration.

Quiet induction is important when there is cardiac damage or respiratory embarrassment. This is not always very easily attained. Thiopentone, the standby in ordinary anaesthesia, has several serious disadvantages. There is reason to believe that it has an adverse effect on the coronary circulation. Thiopentone lowers the blood pressure when this may be only just sufficient to keep the heart's own circulation going. In the dog, lowering the aortic pressure from 130 mm. Hg. to 50 mm. Hg. may reduce the coronary flow by eleven-twelfths. Thiopentone is also a stimulant of the parasympathetic. The result of this is to narrow the coronary orifices. A case of pericarditis died after less than 0.2 of a gram had been used. I understand that this sort of result has been the experience of other anaesthetists.

Cyclopropane is favoured as an inducing agent by some anaesthetists. I do not use it personally on account of its tendency to cause arrythmias. In Brock's recently reported series, one case was induced with cyclopropane; the patient struggled violently and became gravely ill with pulmonary oedema. With vigorous treatment he recovered sufficiently to allow the operation to proceed, to a favourable conclusion.

Because of these difficulties, some months ago I decided to try, as an inducing agent, intravenous ether 5% in saline. Of four cases, the results were very satisfactory in two, fair in one, and poor in the remaining case. So far as I am concerned we have not yet reached the solution.

The use of basal narcosis or heavy premedication will of course assist a great deal towards obtaining quiet induction, and Dr. Hochschild gets good results using paraldehyde. I feel, however, that these methods are often so uncertain in their effect and that it is so undesirable to have a heavily drugged patient at the end of the operation that I do not personally use them.

Obviously when cardiac embarrassment is present, great caution is needed in the administration of intravenous fluids. As a general rule I think one should try to replace only what the patient loses. This includes of course fluids lost in sweating and in the exhaled air. Nevertheless it is our custom to set up two intravenous saline drips because of the serious inconvenience when one fails. One relies a great deal on the 'drip' for the administration of relaxants, etc. Occasionally also very severe bleeding occurs. In one of the 'drips' we use a solution of 1 in 1,000 or 1 in 500 Procaine in normal saline. I use this method in all intrathoracic cases and there seems to be no doubt that it helps to prevent cardiac irregularities and in addition will reduce the amount of other anaesthetic required. We have found that quite a small amount is needed and usually only about one-third to a half of a gram per hour is administered.

I think that one should stress the importance of keeping a careful watch on the total quantity of fluids given, particularly in cases of adhesive pericarditis. These patients are frequently waterlogged.

With regard to the control of cardiac irregularities I believe that Quinidine should be given before operation. Sometimes also 4% Procaine is applied directly to the heart. Intravenous Procaine 1% is of course in common use to control cardiac irregularities.

Those patients who are cyanosed are, for practical purposes, cases of Fallot's tetralogy (other conditions, however, such as mitral stenosis, are now being treated by the surgeon.)

The cases with Fallot's tetralogy which I have seen have all been cyanosed. If they were not, no operation would be required, for it would mean that an adequate supply of blood were passing through the lungs and Blalock's or Potts' procedure would be pointless.

This is then the first and most important problem. As soon as the patient's thorax is opened there is bound to be interference with the lungs' action and also with the circulation of the blood through the lungs. To some extent this effect can be countered by administering a mixture rich in oxygen. I believe that in nearly all cases of cardiac surgery nitrous oxide should not be used during maintenance, but that pure oxygen with ether, or less preferably cyclopropane, is the best method for maintaining anaesthesia.

A new approach to this problem has been made by McQuiston (Anaesthesiol., September 1949). He has had some impressive results in which he cools his patients with the aid of ice bags. The object of this is to lessen the body's metabolism and consequently its oxygen consumption. I think that research into this method is indicated and that it sounds promising. Thiouracil appears not to be of use for this purpose. Apparently Thiouracil may take several months to

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act in the non-thyrotoxic individual, and it probably also has an effect in slowing the metabolism of the heart.

When the pulmonary artery on the side of the operation is grasped and occluded at the time of the anastamosis, the blood supply to the lungs will be further diminished, perhaps disastrously, especially if the larger of the two pulmonary arteries is used. This is the critical time of the operation.

As the anaesthetist obtains further experience in this type of case I believe that he will be able to tell the surgeon before he is too far committed whether it is advisable to continue, or whether the risks are prohibitive. One very unfavourable sign is lack of improvement in colour with administration of high percentages of oxygen. Modern instruments such as the oximeter should help a great deal here.

The blood picture in Fallot's tetralogy is also of interest to the anaesthetist. Commonly the number of red cells is much increased and this will have a bearing on the amount of blood given during the operation.

The ordinary principles of Thoracic anaesthesia apply to those patients who have no cardiac embarrassment or cyanosis.

I should like to mention another problem which is connected with this type of case. Some months ago I gave an anaesthetic for a Blalock's operation in a Bantu child aged about nine. The operation took some time but everything went well. Some hours later laryngeal oedema began and tracheotomy was required. After this the child seemed to be making good progress but died rather unexpectedly about 24 hours later. The exact cause of death was not determined, but it is likely that the laryngeal oedema contributed. This complication is not uncommon after prolonged intubation in children, and I know it occurs after other long operations, for instance on the brain. I have had experience of four such cases. Is it possible to avoid this complication? I think that one can do something towards this. The intubation should be gentle and the cords fully relaxed. The tube should have a smooth surface and should be firmly fixed so that it does not move on the cords during the operation. It is possible that the oedema is connected with an abnormal release of histamine and if this is true there should be a place for anti-histamine drugs. A word of caution is necessary here. These drugs are apt to cause excessive secretion and in a recent case, the operation being for a double aorta, excessive secretion was quite marked especially after the operation. It is held by some anaesthetists that post-operative treatment in a very humid atmosphere will help to prevent laryngeal oedema and in McQuiston's unit a steam room is provided. I think this is well worth trying.

I would like to stress that the observations made are based on the experience largely of the past few years. The anaesthetist plays his part in the team as well as he can but there are factors outside his control. Fate takes a hand sometimes. About a year ago a Native was admitted to Baragwanath Hospital with a knife blade stuck in his right auricle. This was successfully removed and he made a good recovery. However, some months later he fell off a lorry, strangely enough as it was passing Baragwanath, and his injuries were so severe that he died almost immediately.

JOINT MEETING, BRITISH MEDICAL ASSOCIATION AND MEDICAL ASSOCIATION OF SOUTH AFRICA: JULY 1951

Plans for the Joint Meeting of the British Medical Association and the Medical Association of South Africa, which will be held at the University of the Witwatersrand from 16-21 July 1951, are now well in hand. A list has already been received of more than 100 delegates from Britain who expect to be present. Amongst them are:

The Rt. Hon. Lord Horder, G.C.V.O., *M.D., F.R.C.P.*, Physician to H.M. the King and Consulting Physician to St. Bart's. Hospital, the Royal Cancer Hospital, the Royal Northern and Royal National Orthopaedic Hospitals, London. Lord Horder is also Chairman of the Empire Rheumatism Council and Chairman of the British Empire Cancer Campaign.

The Rt. Hon. Lord Moran, M.C., *M.D., F.R.C.P.*, President of the Royal College of Physicians. He is also Physician to St. Mary's Hospital, London, and Consulting Physician to Paddington Hospital and Queen Charlotte's Hospital, London.

Sir William Heneage Ogilvie, K.B.E., *M.D., F.R.C.S.*, Surgeon to Guy's Hospital and the Royal Masonic Hospital, London, and Consulting Surgeon to the British Expeditionary Force. He is a Member of Council of the Royal College of Surgeons.

Dr. H. Stanley Banks, *M.A., M.D., F.R.C.P., D.P.H.*, Physician-Superintendent of Park Hospital, Hither Green, London. He is a Fellow of the Royal Society of Medicine and of the Society of Medical Officers of Health.

Mr. L. R. Broster, O.B.E., *M.A., M.D., F.R.C.S.*, Surgeon to Charing Cross Hospital, London, and Consulting Surgeon to several hospitals outside London. He is President of the Section of Endocrinology of the Royal Society of Medicine. Mr. Broster is a graduate of Rhodes University.

Mr. A. Dickson Wright, *M.S., F.R.C.S., D.T.M. & H.*, Surgeon to Maida Vale Hospital and the Prince of Wales Hospital London. He is President of the Section of Proctology, Royal Society of Medicine, and Professor of Clinical Surgery, College of Medicine, Singapore.

Dr. Charles Hill, *M.A., M.D., LL.D., D.P.H.*, Secretary of the British Medical Association for many years and is well-known as the Radio Doctor of the B.B.C. He has also been honoured with the Presidency of the World Medical Association. Dr. Hill is now a Member of Parliament.

Prof. A. S. Johnstone, *M.D., F.R.C.S., F.F.R., D.M.R.E.*, Professor of Radio-Diagnosis at the University of Leeds, and Director of Diagnostic Radiology at Leeds General Infirmary. At one time he was Radiologist at Groote Schuur Hospital, Cape Town.

Dame Florence B. Lambert, D.B.E., J.P., *M.B., D.P.H.*, Physician i/c. Mechanico-Therapy Department., Charing Cross Hospital, London, and an Alderman of the London County Council.

Prof. Alan A. Moncrieff, *M.D., F.R.C.P.*, Nuffield Professor of Child Health, University of London. He is Physician to the Hospital for Sick Children, Great Ormond Street, London, and Paediatrician to Queen Charlotte's Hospital, London. He is also an Honorary Fellow of the American Academy of Pediatricians and the Canadian Society for the Study of Diseases of Children.

Dr. Doris M. Odlum, *M.A., M.R.C.S., L.R.C.P., D.P.M.*, Senior Psychiatrist to the Elizabeth Garrett Anderson Hospital, London, and Psychotherapist to the West End Hospital for Nervous Diseases, London. She is also Hon. Consulting Psychiatrist and Hon. Consulting Physician to a number of hospitals outside London. Dr. Odlum is Vice-President of the National Association for Mental Health and is late Hon. Senior Psychiatrist and Director of the Child Guidance Clinic, Royal Victoria and W. Hants. Hospital, Bournemouth.

Dr. Bethel Solomons, *M.D., F.R.C.O.G.*, late Master of the Rotunda Hospital, Dublin, and at present Gynaecologist at Mercer's Hospital and Dr. Steeven's Hospital, Dublin. He is President of the Royal College of Physicians of Ireland and Vice-President of the Royal College of Obstetricians and Gynaecologists. He is also President of the Section of Obstetrics, Royal Academy of Medicine, Ireland, and Hon. Fellow of the American Association of Obstetricians, Gynaecologists and Abdominal Surgeons.

Further names are awaited from Britain and there will also be visitors from Canada, Australia, America and possibly from other countries.

Apart from the scientific meetings which will be held throughout the week, there will be visits to gold mines and compounds, exhibitions of Native tribal dances, excursions to Onderstepoort and other places of interest, etc. Arrangements will also be made for South African delegates who wish it, to join the overseas visitors on tours to the Victoria Falls and the Kruger National Park; itineraries and approximate costs are being prepared by the S.A.R. Travel Department.

All members of the Medical Association of South Africa are entitled to attend the Joint Meeting and those who have not yet advised the Organizers of their intention to be present should do so at once. There will be no registration fee. Further information may be obtained from Congress Office, Medical House, 5 Esselen Street, Johannesburg.

O.V.S. EN B. TAK: N.-V. AFDELING

Op 16 September 1950, het die N.-V. afdeling van die O.V.S. en B. tak van die S.A. Mediese Vereniging sy jaarlikse dinee in die Grand Hotel te Kroonstad gehou. Daar was 61 kollegas en hulle gades teenwoordig, asook prof. Elliott van Johannesburg.

Die Voorsitter, dr. Dykman, het die teenwoordiges welkom geheet en gevra dat almal 'n oomblik moet staan as 'n mosie van roubeklag oor wyle dr. G. Beyers.

Na afloop van die dinee het dr. Jacobs 'n heildronk op die dames ingestel en hulle is afgestuur na 'n bioskoopvertoning terwyl die dokters almal na die lesingsaal by die hospitaal verdaag het.

Op die vergadering was verteenwoordig Kroonstad, Vredefort, Viljoenskroon, Lindley, Edenville, Ventersburg en selfs Bloemfontein. Prof. Elliott is dadelik aan die woord gestel. As tema het hy gekies, *Notes on Some Modern Therapeutics*. Hy het begin met die nuwe chemotherapie en antibiotiese middels. Op duidelike en praktiese wyse het hy kosmos in die chaos van die hedendaagse behandeling geskep. Hy het gewys op voordele, nadele en gevare, en veral klem gelê op die haelroermetode van behandeling.

Hierna het hy oorgegaan tot die behandeling met *anti-koaguleermiddels* veral Dicumarol. Hy wys interessante kaarte van verskillende tipes reaksie wat verkry word en beklemtoon veral die feit dat die behandeling nie doeltreffend kan toegepas word sonder 'n laboratorium waar 'n daaglikse prothrombin-indeks kan bepaal word nie.

Sy volgende is die *haemopoetiese* middels. Hier is dit weer noodsaaklik om 'n definitiewe diagnose te stel en dan die regte middel in effektiewe dosisse toe te dien. Hy dring aan op die belangrikheid van 'n barium maal te doen op alle gevalle van anaemie. Hy toon X-straal fotos van 'n geval met tipiese kanker beeld roentgenologies, waar bloot vergroeiings by operasie gevind is. Ander plate is gewys van 'n diaphragma-breuk met erg anaemie.

Hy bespreek vervolgens *hipertensie* en kom tot die gevolgtrekking dat die Smithwick-operasie slegs baat vir die jong persoon met vinnig toenemende hipertensie met erg hoofpyn en oogtekens soos papilloedeem. Hy glo nog dat luminal en goeie raad insake 'n man se lewenswyse die beste behandeling vir die toestand is.

Prof. Elliott word op paslike wyse deur dr. Derksen Snr. bedank.

Hierna verdaag die vergadering na die Sentrale Kafee om weer by die dames aan te sluit en die aand oor 'n koppie af te sluit.

NATAL COASTAL BRANCH

MINUTES OF A CLINICAL MEETING HELD AT THE ST. JOHN AMBULANCE HALL, DURBAN, ON 27 SEPTEMBER 1950 AT 8 P.M.

Present: Dr. A. Broomberg (Vice-President) in the Chair and 45 members and guests.

Subject: *Thyroid Diseases.*

The Chairman in his opening remarks gave a brief general survey of these diseases which he considered to be of particular and outstanding importance. Different aspects of the subject were dealt with by Drs. F. E. Ingle, N. A. Rossiter, A. G. Sweetapple, Nathan Sacks and L. H. Walker.

Dr. Ingle considered some of the psychiatric aspects of thyroid conditions and especially anxiety neurosis and shock which often preceded thyrotoxicosis. He said that thiouracil had brought the physician into the picture more than previously, when this condition was considered to be chiefly a surgical one. He stated that present-day phobias such as claustrophobia were more common in women and that in hypothyroidism (myxoedema) mental illness was an associated factor, e.g. dullness, depression, and failing memory and was also more common in females. He remarked that the catatonic schizophrenic would tolerate very large doses of thyroid extract.

Dr. Rossiter gave a concise though detailed account of the treatment of thyrotoxicosis with thiouracil. He mentioned the chief contra-indications to its use and also the indications for surgical and for medical treatment. He dealt with dosage and the toxic effects which might be expected, and recommended weekly blood counts during the first month or two of treatment; if the white cells fell below 3,000 per c.mm. the drug should be stopped. In referring to prognosis he said that in suitable cases thiouracil could be expected to offer a 3 : 1 chance of lasting remission and that propyl thiouracil was said to be less toxic.

Mr. Sweetapple considered the principles of the surgical treatment of hyperthryoidism and of malignant disease of the thyroid. He said that the methods at present in use were second best only, as the underlying basic etiology of hyperthyroidism was not yet understood and that surgery was the quickest and most certain method of treatment available.

Recurrence mostly arose in the diffuse toxic gland and was negligible in the toxic nodular goitre. He dealt with the pre-operative treatment which depended on the degree of toxicity and size of the gland and mentioned that thiouracil increased the friability and vascularity of the gland. He specially referred to two routine precautions which should be taken during the operation:

1. High-up transverse division of the pre-thyroid muscles to afford the best exposure.
2. Free dissection of the recurrent laryngeal nerves to avoid damage to them.

With regard to adenoma of the thyroid, *Mr. Sweetapple* considered that carcinoma was especially liable to occur in the non-toxic solitary nodule.

Dr. Nathan Sacks dealt with the treatment by ionizing radiation and he considered that radio-active iodine was the treatment of choice to-day for Graves' disease, and should not be given within one month after ordinary iodine; but very large goitres were not treated in this manner. Ordinary iodine was given, after the radio-active, to wash the latter out. Few cases of myxoedema followed this treatment.

With regard to carcinoma or malignant disease, *Dr. Sacks* stated that radio-active iodine had very little place in treatment as the uptake of the iodine was very small indeed.

He was of the opinion that the results from surgery plus X-radiation were surprisingly good and that adenocarcinoma was very susceptible to X-radiation. The closer the histology of the gland was to normal, the better the results from radio-active iodine. The radium bomb was sometimes successful, especially where deep X-ray therapy had failed, but radium needle implants and collars had been discarded.

Dr. L. H. Walker considered some aspects of thyroid pathology and of B.M.R. estimations. He gave a classification of goitres and mentioned points of interest in the various types. He said the normal B.M.R. range was +15% to −15%, but that an anxiety neurosis might cause a rise.

Discussion. *Drs. Cuthbert, Broomberg, Moshal* and *Warner* took part.

The Chairman very warmly thanked the speakers on behalf of the meeting for the excellence of their addresses, which were of the greatest interest, and showed that a great deal of time and trouble had been given to their preparation. He said that many stimulating points and features had been raised, creating discussion. Medicinally the answer to the treatment of hyperthyroid diseases might be in radio-isotopes becoming generally available.

CAPE HOSPITALS

The Medical Secretary has been informed by the Director of Hospitals in the Cape Province that Medical Superintendents have been instructed to insist that all patients seeking free medical attention in Cape hospitals should produce a letter from a doctor, a magistrate, a minister of religion, or a social worker, certifying that the patient is not able to pay for the services of a private practitioner.

As it is most likely that the majority of the patients seeking free medical attention in hospital will be referred by doctors, practitioners are earnestly requested to see that patients so referred are provided with a brief note of reference so that they may not be inconvenienced by being turned away.

PASSING EVENTS

We regret to record the death of Dr. Harold Follit of Underberg.

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Congratulations to Dr. and Mrs. I. Balkin on the birth of a daughter.

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We regret to record the death of Dr. C. J. Albertyn, Inspector of Interns.

Dr. J. C. Gie has returned to Cape Town after a five-month visit overseas.

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Dr. Alec Singer of Cape Town was married on 25 October 1950 to Miss Matine Harman.

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Congratulations to Dr. and Mrs. M. R. Blair of Cape Town on the birth of a son.

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Dr. S. Etzine of 508 Castle Mansions, Eloff Street, Johannesburg, has been elected an honorary member of the Barraquer Ophthalmic Clinic of Barcelona, Spain.

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Dr. and Mrs. S. Michelson have returned to Cape Town from a visit to the Continent and the United Kingdom. During his stay overseas Dr. Michelson attended the Cardiological and Internal Medicine Congresses in Paris in September.

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Congratulations to Dr. and Mrs. M. Korodetz of Cape Town on the birth of a son.

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Dr. J. C. Gie, of Sea Point, has been awarded the Bronze Medal of the Medical Association of South Africa for meritorious service to the Association and the medical profession in the Union.

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Dr. I. Schrire, of Cape Town, has been awarded the Hamilton-Maynard Memorial Medal of the Medical Association of South Africa in recognition of his outstanding contribution entitled *The Diagnosis of Hyperthyroidism*. This was published in the *South African Medical Journal* on 15 January 1949.

GOLD MEDAL AWARD: DR. J. S. DU TOIT

Dr. J. S. du Toit, of Cape Town, has been awarded the Gold Medal of the Medical Association of South Africa for outstanding services to the medical profession and the Association.

Dr. du Toit has been the Honorary Treasurer of the Association for over 20 years and has served on many Committees and the Federal Council. He was a part-time lecturer at the Medical School, University of Cape Town, for a number of years and is at present a member of the Council of the University of Cape Town.

The presentation of the Gold Medal to Dr. du Toit will take place in Johannesburg next year on the occasion of the Joint Scientific Meeting of the British Medical Association and the Medical Association of South Africa.

THE BENEVOLENT FUND

The following contributions to the Benevolent Fund during September 1950 are gratefully acknowledged:

Votive Cards: *In Memory of*:

Dr. H. Pillemer *by* The District Surgeons of the Peninsula, viz. Drs. G. S. Smit, L. Sive, T. B. Truter, L. S. Smith, H. G. L. Rauch, J. Rauch and P. Samols.
Dr. K. Frater *by* Dr. J. S. du Toit, Dr. F. Sutton Charnock, Dr. F. Krone, Dr. A. W. S. Sichel, Dr. B. D. Knoblauch, Dr. V. Brink, Mr. L. B. Goldschmidt, Dr. and Mrs. J. D. M. Claassens, Dr. G. de Vos.
Dr. S. F. Silberbauer *by* Dr. B. D. Knoblauch, Dr. G. de Vos, Dr. and Mrs. J. K. de Kock.
Matron Skelton *by* Dr. B. D. Knoblauch.
General J. C. Smuts *by* Mr. L. B. Goldschmidt.

Total Amount Received from Votive Cards:	28	7	0
Services Rendered to:			
Dr. H. S. Gear *by* Dr. A. J. Ballantine, Dr. Hamilton Bell.			
Mrs. F. E. Dyer *by* Dr. T. D. Gordon, Dr. A. Walbrugh, Dr. J. MacFadyen.			
Mrs. Dreosti *by* Dr. Haden.			
Total Amount Received from Services Rendered:	18	8	0
Donations:			
Medical Officers Health Group of the Medical Association of South Africa	10	10	0
	£57	5	0

REVIEWS OF BOOKS

PHYSIOLOGICAL BASIS OF MEDICAL PRACTICE

The Physiological Basis of Medical Practice. By Charles Herbert Best, *C.B.E.*, M.A., M.D., D.Sc. (Lond.), F.R.S., F.R.C.P. (Canada) and Norman Burke Taylor, V.D., M.D., F.R.S. (Canada), F.R.C.S. (Edin.), F.R.C.P. (Canada), M.R.C.S (Eng.), L.R.C.P. (Lon.). (Pp. 1330 + xiii. With 601 figures. Fifth edition. 84s.) London: Baillière, Tindall and Cox, 1950.

Contents: 1. The Blood and Lymph. 2. The Circulation of the Blood. 3. Respiration. 4. The Excretion of Urine. 5. Digestion. 6. Metabolism and Nutrition. 7. The Ductless Glands or Endocrines. 8. The Nervous System. 9. The Special Senses. References. Index.

This is undoubtedly one of the most comprehensive and authoritative textbooks of physiology. Within its ample scope no topic is omitted, and the constant critical review of the matter selected for inclusion makes Best and Taylor's volume a most admirable one for reference by the student as well as the medical practitioner.

The success with which medical practice has been married to its fundamental physiological bases is one of the attractive features of this work. The authors have, for the new edition, undertaken the prodigious labour of having the text re-set completely.

It would be mere carping criticism to find fault with any minor point of omission. It is suggested, however, that the authors should seriously consider the inclusion of a short paragraph indicating the total volume of the normal seminal ejaculate; nor is it sufficient to know that the normal sperm count is 60 million per c.c. It is just as important to know what the limits of normal variation may be. The important observations of Farris, amongst others, are undoubtedly worthy of note, as the textbook is intended for physicians as well as students. Much misdirected therapy is often instituted on the basis of inadequate quantitative and morphological seminal studies.

Best and Taylor's book has already had four translations into Spanish and two into Portuguese. The new edition has been so thoroughly revised (the previous edition appeared in 1945) that it will be a welcome addition to the library shelves for undergraduate as well as post-graduate students.

CLINICAL PATHOLOGY: 1949

The 1949 Year Book of Pathology and Clinical Pathology. (*Pathology*: Edited by H. T. Karsner, M.D., LL.D.; *Clinical Pathology*: Edited by A. H. Sanford, M.D.). (Pp. 543. With 161 illustrations. $4.75.) Chicago: Year Book Publishers Inc. 1950.

Contents: *Pathology*: 1. General Pathology. 2. Cardiovascular System. 3. Hemopoietic System. 4. Respiratory System. 5. Alimentary Tract and Associated Glands. 6. Urinary System and Male Genitalia. 7. Female Genitalia and Breast. 8. Glands of Internal Secretion. 9. Organs of Locomotion. 10. Nervous System. 11. Miscellaneous.
Contents: *Clinical Pathology*: 12. Introduction. 13. Hematology. 14. Clinical Chemistry. 15. Liver Function Tests. 16. Serology. 17. Bacteriology. 18. Myeology. 19. Cytology. 20. Endocrinology. 21. Microscopy. 22. Apparatus.

This book follows the general lines of its predecessors and consists chiefly of a series of abstracts of papers on Pathology and Clinical Pathology. The majority of these abstracts are from American literature, but British and European journals have also been consulted.

In addition to the abstracts, there are in the section of Pathology, four special articles by recognized authorities, on *Pathology of Atomic Bomb Casualties*, *Problem of Early Cancer*, *The Physiopathology of Cancer*, and *Neoplasia in Fishes*, *Amphibians and Reptiles*.

These articles provide a short review of the subjects they discuss and the last three include a list of references for further study.

The majority of the abstracts appear to have been selected to provide the busy pathologist and consultant with easy access to the world's literature and a high general standard of accuracy has been maintained.

Occasional printing errors, however, make some of the abstracts rather difficult to follow. Thus on p. 322 an abstract of a paper 'Anti-M Antibodies and Latent N-Antigen in Man' states the M and N sub-groups of a child and its parents, in a form which is not compatible with the text of the abstract.

The illustrations are good and the photomicrographs of tissues in particular show excellent details of cellular structure. The book is of handy size and like its predecessors, will find a welcome place on the shelves of the pathologist, the clinical pathologist and the clinician who wishes to keep abreast of the latest research in pathology.

CORRESPONDENCE

THE MEDICAL PROFESSION AND THE LAY PRESS

To the Editor: Very recently a Johannesburg daily published a leading article under the heading *Unprofessional Conduct*, attacking the medical profession in a most undignified manner. 'Brass plates are not as bright as they used to be and there are Packards on the market. The doctors are having a "bad time". . . . There is every prospect of a good crop of duodenal ulcers in 1951. . . ., etc.' were the words of this article. It was clear that the writer of that leader has a personal grudge, real or imaginary.

This leader was followed by a heated and also objectionable correspondence for and against the profession. Because it appeared to be a free fight I also sent a letter, which was not published, but which I feel should find the necessary space in these columns.

The letter was as follows:

'*Sir*,—The correspondence *re* doctors has by now assumed an objectionable turn, which is also puerile in its arguments. It is not a question of being proud at all (as one of the correspondents states he is), because we are all supposed to walk humbly before our Creator.

It was stated by early missionaries that the primitive people amongst whom they resided were prepared to accept medical treatment on condition that they received remuneration as well. It seems that the abuses in your columns emanate from people of such mentality. It surely cannot be denied that a medical practitioner is justly entitled to receive a reward for his labour. The prevailing idea seems to be that the medical practitioner should work for the love of his fellow humans who, however, do not love him. It is always the other patient, and not the one demanding services for nothing, who is supposed to pay. It is a free country and the sufferer is not obliged to go to a doctor while there are quacks who, by the way, give him nothing for nothing. It is known that thousands of medical men have spent a lifetime doing also charitable work, even in these days when we are supposed to have a free hospitalization service.

But what has happened to the old trusted friend of the family who, in accordance with your arguments, has entirely disappeared? If this is a fact what, in your opinion, is the reason for it?

Of course, even Editors are only human and not infallible. But they ought to know that a physician is not also a magician. I feel that this leader and correspondence has not increased the old prestige enjoyed by your paper. I feel inclined to suggest that if the old-fashioned doctor seems to have disappeared, the same must be said about the Editors. I feel certain that the late Mr. ——, whom I had the pleasure of knowing personally, would not have permitted such a leader and such correspondence to continue.

L.R.C.P. & S. (Edin.).

P.S. In spite of what the above contains I trust that you will be fair enough to publish it. Even if you have an obvious grudge against some of my colleagues you should be fair enough to those who do not belong to the black sheep of the profession. And there is the Medical Council to deal with them. . . .

With Compliments,
(Signature).'

I hope, Sir, that in future the Medical Association will find it expedient and also necessary to reply officially to such attacks. I feel that the cause of the profession should not be championed privately even by a member of the Association. For this reason and purpose a special Committee in every seat of a Branch should be established.

It seems a very sad state of affairs that even leading newspapers must be requested:

1. To scrutinize carefully letters attacking the medical profession in a most ignorant and undignified manner,
2. Not to write in a similar manner when commenting editorially.

I trust that the above communication will receive the attention of the Federal Council as soon as possible.

Physician, but no Magician.

Johannesburg.
12 October 1950.

FEE FOR ELECTROCARDIOGRAM

To the Editor: Dr. Green, Chairman of the Central Committee for Contract Practice, is evidently not accurately acquainted with the fee for an electrocardiogram decided upon by his Committee. Page 4 of the Tariff of Fees lays it down as 19s. not as £1 10s. less 10%. The preamble states that if the procedure is done on any occasion other than the initial visit or consultation *only the fee for the minor procedure should be charged*.

Most physicians are now doing nine unipolar leads in addition to the old limb leads. This involves 12 leads instead of the previous three limb leads and one chest lead. Because of the changing of wires needed on present-day machines when changing from an aVL to an aVR and an aVF, the procedure takes me three times as long as it used to do, and the lives of the batteries are about half of what they used to be.

It is quite apparent that the Committee drawing up the Tariff could not have known of the work involved in taking the additional Goldberger leads. Alternatively it is guilty of a bad lapse of judgment; 19s. does not cover the cost of materials in taking 12 leads.

It is incredible that any competent body could specify the same fee of 19s. for (i) a specialist physician doing 12 leads and *including* cost of materials and (ii) an intramuscular injection *excluding* cost of materials. Procedure (i) takes 20 times longer than procedure (ii), apart from the cost of materials involved in the former.

I should like to suggest that the minimum fee for doing the 12 leads should be £2 2s. and the fee for an intramuscular injection should be reduced to 10s. 6d.

Incidentally the fee of £1 17s. 9d. which the radiologist gets for X-raying a finger is probably not excessive but compares very favourably with the 19s. for a cardiogram.

B. G. Shapiro.

Dumbarton House,
Church Street,
Cape Town.
12 October 1950.

TICK BITE OF THE TYMPANIC MEMBRANE?

To the Editor: I was interested to read the letter from *Odie* in your issue of 7 October 1950, in which she describes the case of a tick biting the tympanic membrane, causing tick-bite fever.

I am not aware that such a case has been described before, but I would have expected a more persistent temperature, very severe local reaction with much necrosis and oedema of the drum with adenitis and possibly a rash in a very sick infant. An agglutination test would have helped considerably.

Odie's clinical picture is that of a small transluscent tick causing only an injected drum locally with a temperature of 102.6° F, that subsided after an enema. Five days later the temperature returned and an opaque tick was recognized. What was the drum like then?

On *Odie's* clinical signs I would suggest that the initial temperature was due to constipation as the temperature dropped after a successful enema. The small transluscent tick was probably not a virus carrier and, after feeding sufficiently, it became opaque and then it could have caused the second temperature five days later.

I commend *Odie* on being so 'ear conscious' and on her fine clinical observations on the ear of so tiny a patient.

Foreign bodies in ears always remind me of the case of a final year medical student who was admitted at midnight as a case of acute otitis media, and put on heroic doses of antibiotics and chemotherapy. When seen the next morning, there was a rose beetle lying on the drum, frantically waving its legs because of the predicament it was in; and finally, there was the case of the *piccanin* who had a germinated mealie with the bud coming out of the meatus.

J. Fine.

204 Medical Centre,
Jeppe Street,
Johannesburg.
16 October 1950.

SIR REGINALD WATSON-JONES' VISIT

To the Editor: Surely better arrangements could have been made than have been made on the occasion of the visit to this country of Sir Reginald Watson-Jones. I, for one, very much wished to have an opportunity to hear him; but there has been no time-table published and I have had to send prepaid telegrams and make personal-service calls to various centres to try to find out details.

The profession at Port Elizabeth, so I am informed, at this date are still uncertain of when they are due for a visit, and if so when and where any lectures are to be given. They have had to telephone Sir Reginald Watson-Jones to find out details. I consider this a reprehensible state of affairs and feel that it should not be permitted to recur.

Who organizes these things? Are they organized at all? If not, then why not?

I most heartily resent having to miss the opportunity of hearing this outstanding authority speak on a subject which interests me deeply.

J. L. D. Paisley.

P.O. Box 31,
Cala, C.P.
16 October 1950.

DOCTORS' HOBBIES EXHIBITION
JOINT MEETING B.M.A.-M.A.S.A., JULY 1951

To the Editor: I have been appointed to organize a display of Doctors' Hobbies at the forthcoming Joint Meeting in Johannesburg, and would be glad if you could publish this appeal to my colleagues throughout the country for exhibits in this section.

It should be a popular one, particularly with our B.M.A. visitors, as it is something which they have not got at their Annual Meetings.

Some exhibits have already been promised, but more are needed to make it a good show. Anything made or collected by doctors would be welcome—paintings, photographs, furniture, Africana, stamps, historical medical books, etc.

When offering any exhibit please state how it will be sent and taken away; and if any special mounting is needed for it. The value should also be stated, for insurance purposes.

J. H. Harvey Pirie.

Medical House,
5 Esselen Street,
Johannesburg.
20 October 1950.

THE B.P.C. 1949

To the Editor: I have been requested to suggest to you that members of your Association be circularized with information in regard to the B.P.C. 1949, which has now been gazetted as official.

I would like to point out that there are several changes in formula which are bound to mystify many medical practitioners. I would like to instance the change in formula and nomenclature of, for instance, Linctus of Diamorphine and Linctus of Diamorphine and Hyoscyamus, the latter being almost identical to the 1934 B.P.C. formula for Linctus of Diamorphine.

Another example is Liniment of Methyl Salicylate and Liniment of Methyl Salicylate and Eucalyptus. Again the latter most nearly corresponds with the formula more familiar to your members.

Such a circular will help to obviate certain difficulties which have arisen due to pharmacists dispensing the items as prescribed, when in certain circumstances the prescriber may have intended the earlier formulae.

I trust that this suggestion will be of use to your members.

J. B. Wolff,
Hon. Secretary.

The Pharmaceutical Society of South Africa.
P.O. Box 375,
Cape Town.
20 October 1950.

THE STATUS OF THE GENERAL PRACTITIONER

To the Editor: As a medical student, I was very interested and not a little disconcerted, by the articles referring to the *Status of the General Practitioner* which appeared in the latest issue.

We at present are attending an introductory course to clinical medicine and, fortunately, some of our lecturers have stressed the utmost importance of the relationship between doctor and patient and the inadequacy of specialized investigations without a thorough case history and knowledge of the patient's environment and outlook. However, one can't help feeling that most of them are more interested in the disease than the patient.

Medical knowledge has progressed so remarkably in the last few decades that it is now impossible for any man to have a complete understanding of every aspect of the subject; so the student is faced with the choice of either becoming a specialist in the field which most interests him, or else being content with a limited knowledge in every field. That is, unfortunately, more or less how the problem presents to us to-day and as such the intelligent solution is to adopt the former plan if it is within our capabilities and means.

However, if we could feel that general practice was in itself a specialist branch, as in reality it is, most students could learn all there is to know about any one group of diseases; but few can have a practical knowledge of all the processes of the human complex, both in health and disease, and be able to apply this knowledge every day. The solution therefore lies in the establishment of a Chair of General Practice as soon as possible, and why not here in Cape Town? Thus it would be possible by post-graduate study to become a Member of the College of General Practitioners (or similar title).

Naturally it would be essential for a doctor wishing to obtain this qualification to have had three or four years at least in general practice.

Another factor contributing to the growing ranks of specialists is that each subject in our present curriculum is treated too much as a separate entity by lecturers (who are experts in their various fields) instead of in relationship to the whole. By the end of the second year we are all qualified anatomists and yet with a very limited practical understanding of the subject; at the moment, with examinations approaching, we feel they are examining us as pathologists and those of us who are interested in the subject are seriously considering specializing in it. So by the final year each student has chosen his favourite subject and if he has the opportunity he will specialize in it. Only the student who has correlated all his knowledge and who has given a balanced amount of attention to each will feel fitted to go into general practice.

Finally, having considered the problem from a personal angle and being, at the moment, inclined to go into general practice, it would seem that the best course, in the absence of a specialist degree in the subject, would be to aim for an M.R.C.P. or similar degree and then to go into general practice, which should help to raise my status to the so-called 'higher level' of the specialist.

Medical Student.

Cape Town.
21 October 1950.